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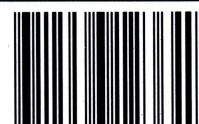
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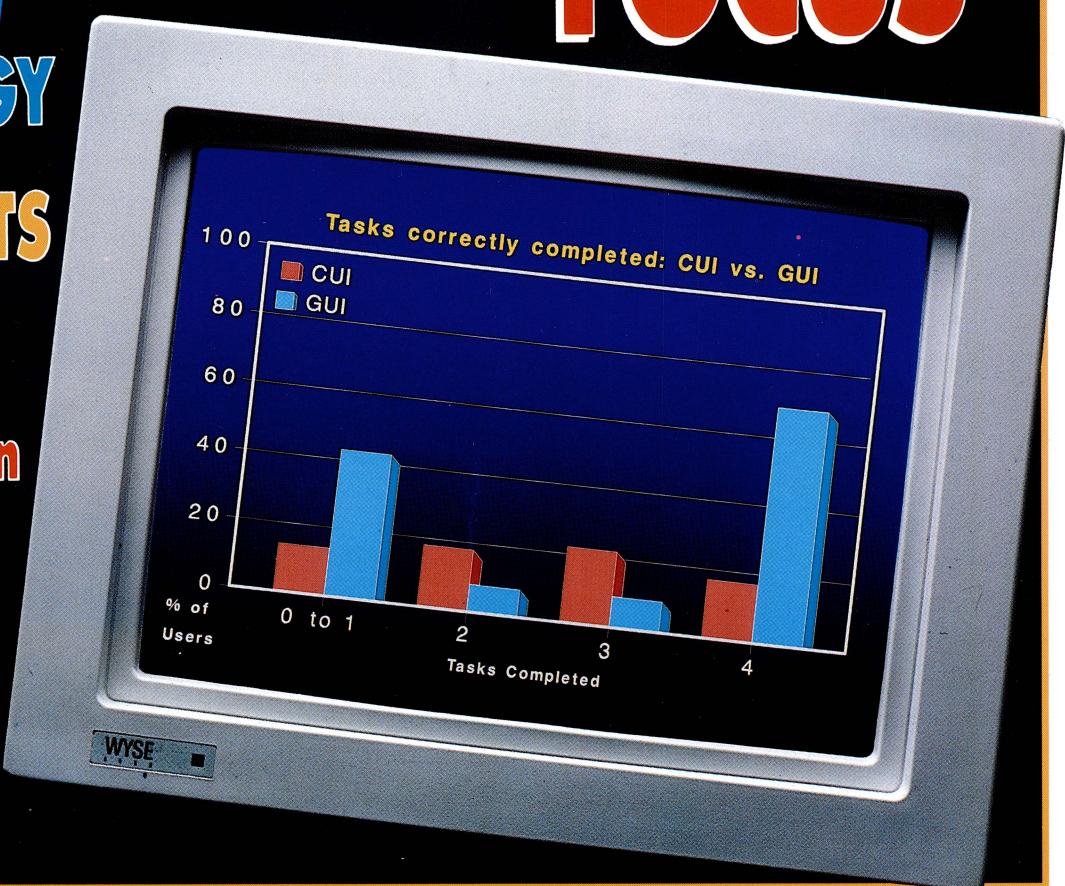
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TECHNOLOGY

THE BENEFITS
OF GUI

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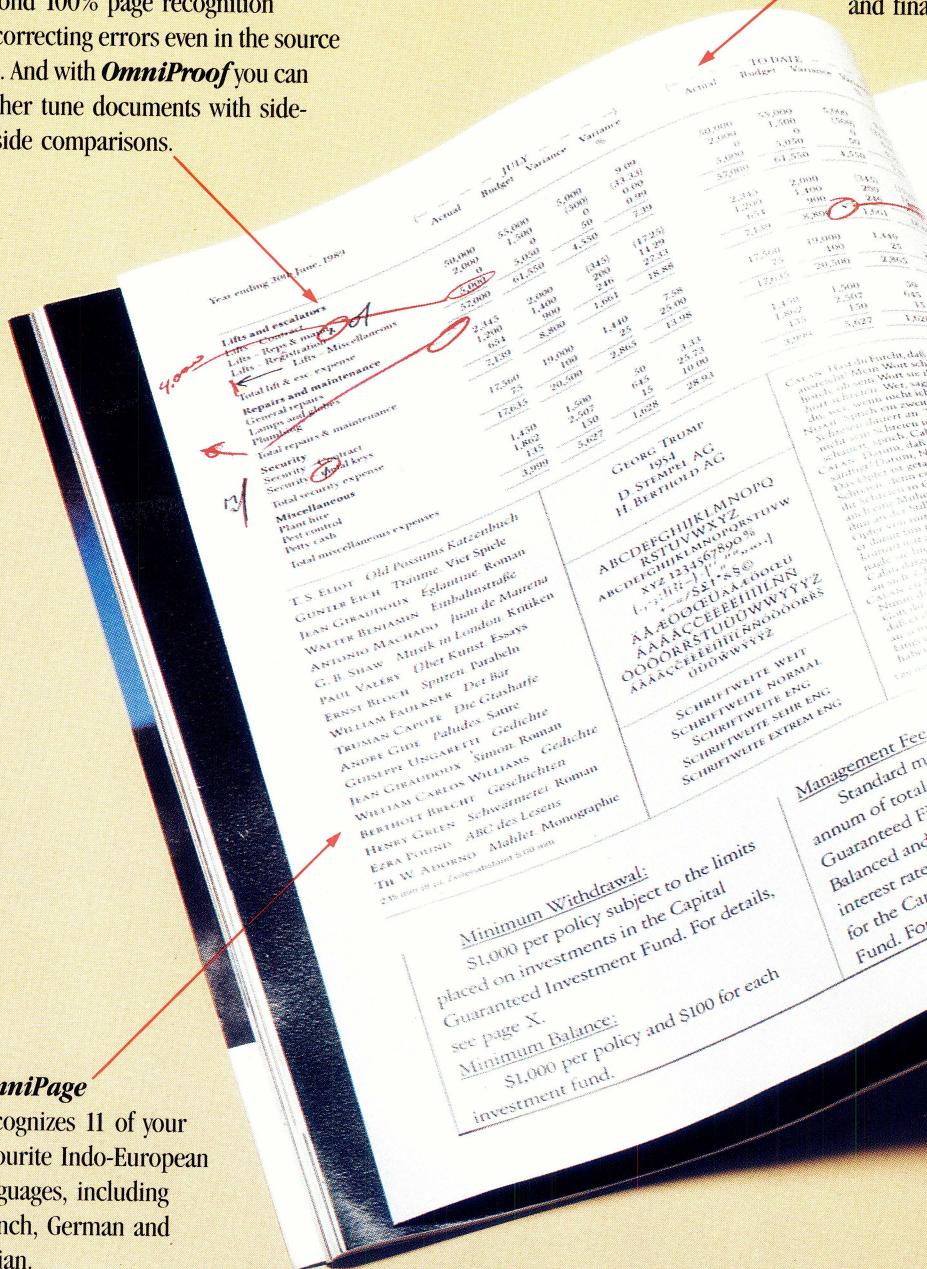
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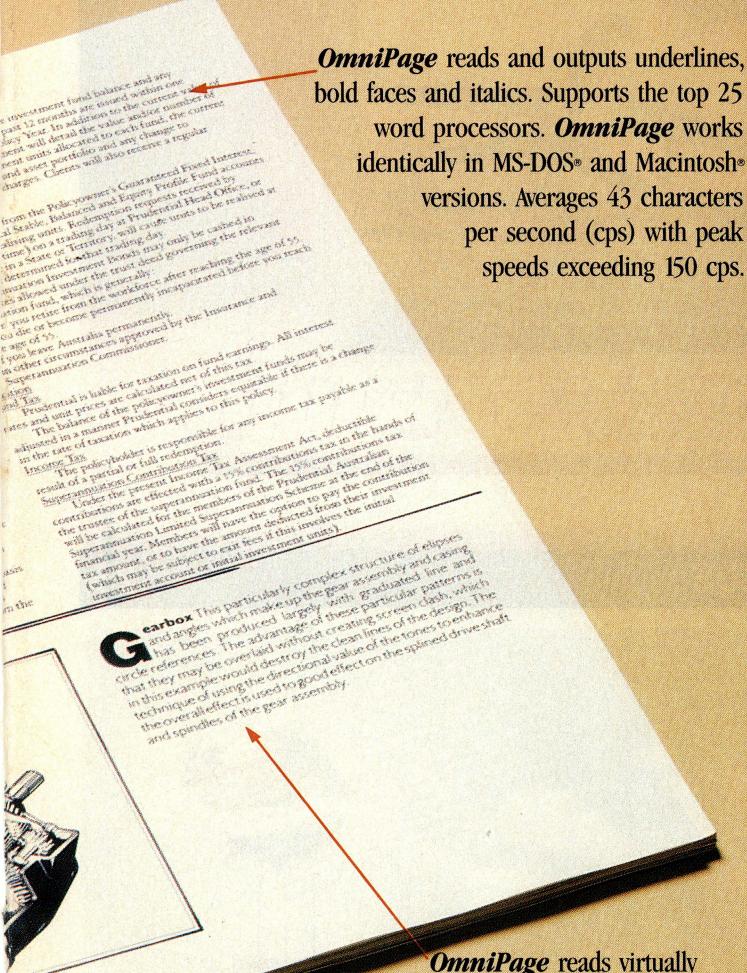
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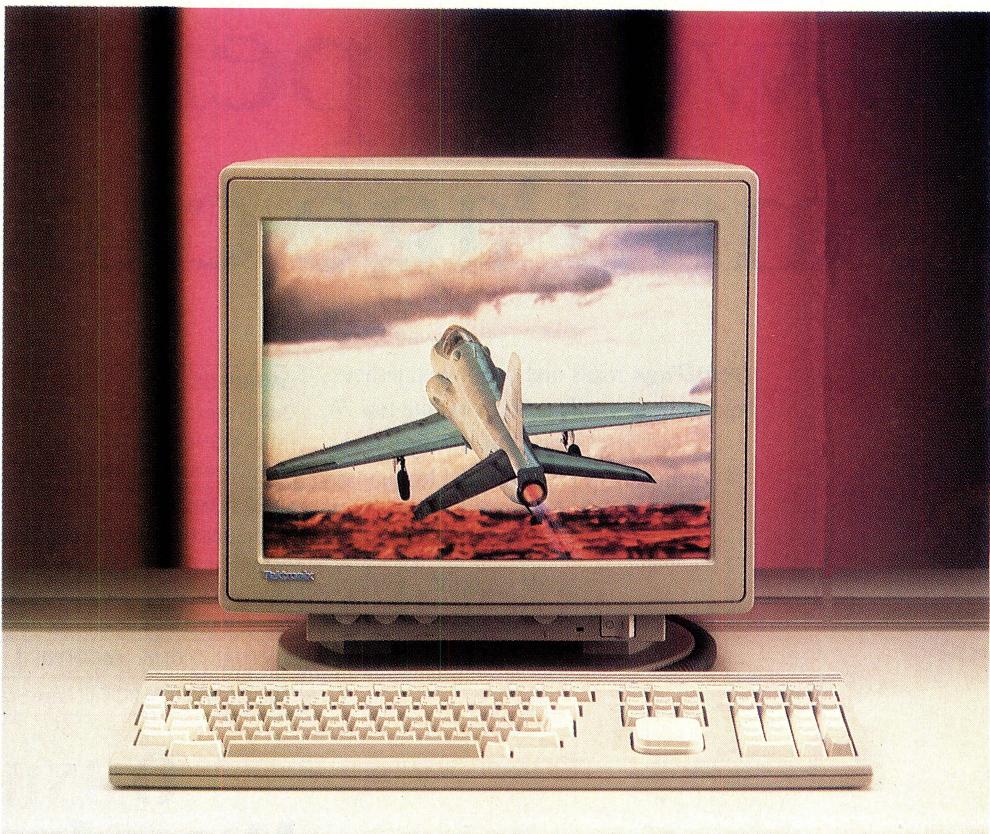
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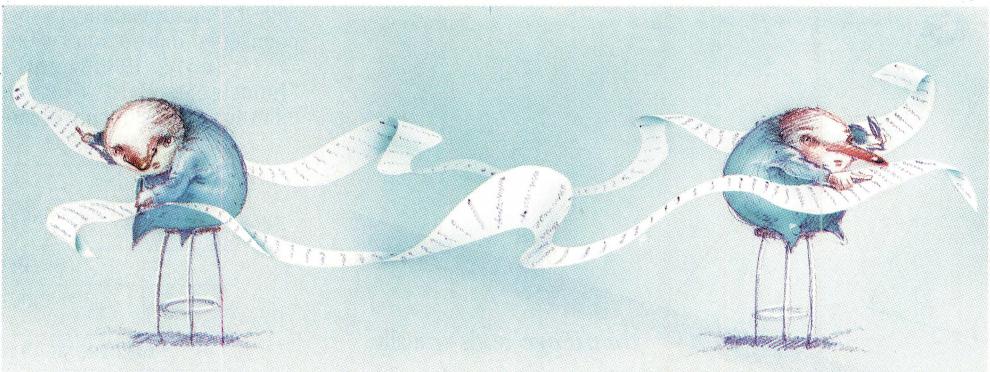
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COMPUTERS AND THE LAW

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NEXT MONTH INCLUDES

IN SEPTEMBER we have four main features – first, we cover the industry in Queensland, where they've hardly noticed the 'recession'. Then we have the backup feature promised for this month – our apologies, but it couldn't be ready in time for this issue. For those who have been thinking of expanding their system with more PCs, or buying computers for a small business, our Entry Level Computing feature will help guide the decision. And, for those who have been considering networking an already-installed system, Mark Cheeseman's feature on networking will tell you how to decide on a network and how to implement it.

This month's cover: Concept from Sally-Anne Silveira, photography by Peter Beattie; cover slide created with Zenographics' Pixie and converted to 35mm film by Ffotograff; Wyse monitor courtesy of The Great Escape.

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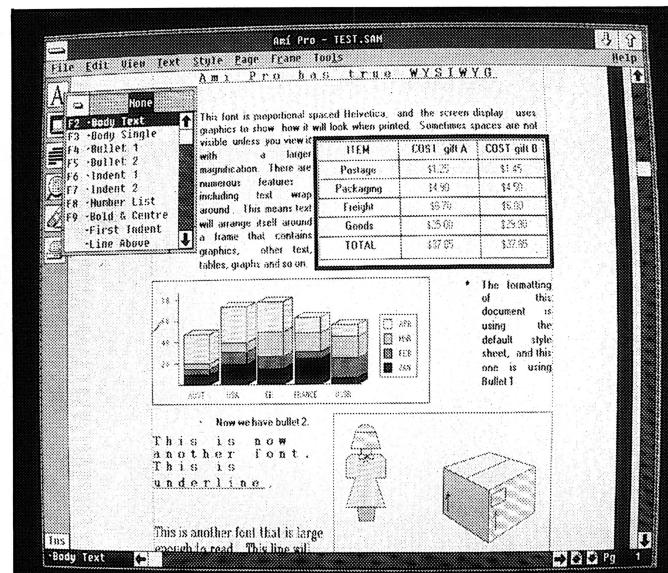
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YOUR COMPUTER



JAKE
KENNEDY

The month that is!

WITH THIS issue we have most of the enhancements to the pages of YC that you've been promised in place. 'Industry Updates' has gained a following amongst those who want to stay informed on broader issues without having to wade through the dross, and 'Tech Tips' has been embraced by the leading hardware and software suppliers – their tech support people have promised to supply us with the three questions that new users of their products ask (with answers, of course).

Shrunkle remains unmentionable (except he has a rather useful Tech Tip this month for those who have too many files hanging around) and Mark Cheeseman put together our first coverage of new products and happenings in the field of networking and communications. He is particularly interested in hearing from users with personal experience in implementing a network, or any problems with communications in general.

In this issue, we have two articles that directly address two quite diverse, but equally misunderstood topics. The first is 'The Benefits of GUI' – for years most users who worked on a Mac or an Atari ST, even the early versions of Windows, knew in their hearts that life was easier with a graphical user interface; now with research sponsored by Zenith and Microsoft, which we summarise here, it's been quantified and proven. At every level of office work, a graphical interface offers greater productivity – and that applies to even the most mundane tasks.

The second is 'Computers and the Law' – this article is actually a reprint of Chapter 3 of Peter Knight and James FitzSimons' book *The Legal Environment of Computing*. We chose the topic that we

August 1983

For many medium-sized companies, the problems associated with growing needs for data processing resources may be solved, not by upgrading traditional mainframe solutions, but by a relatively new technique – the local area network – *'Local area networks'*, p6.

Don't believe anything anyone tells you. See the system working, in the configuration you intend using, with the software you will be using – *Peter Robinson of Citicorp in 'Personal Experience'*, p19.

think our readers should be most well-informed on: copyright. This is certainly one of the most misunderstood concepts in the computer world and needs to be grasped by everyone – not just developers and resellers, but users at all levels. Our thanks to Addison-Wesley, the publisher, for permission to reprint the chapter.

Mark and I have both had an interesting month. He has his Novell network up and running and has a wealth of experience to pass on next month in his networking feature. He's also sorted out the errors in the

current crop of V32 MNP4 modems and will be reporting on that exercise (and more) in October.

I've kept myself amused with Corel Draw and Pixie – ample evidence of which can be seen in these pages, from the cover to 'Monitors in focus' and the GUI article. We hope to have the second edition of *Your Atari* on sale by the time you read this. I've been learning to use Calamus and Outline Art so we could desktop publish this next issue, and, at the same time, gain hands-on experience with high-end Atari ST applications. Even with a background in Ventura and PageMaker, my initial impression of this package can be summed up in one word: Wow! It has font manipulation, graphics and text handling features that are much more powerful than those two Dos packages. And, since the STs can read Dos floppies, there's no reason why DTPers shouldn't move to an Atari ST for publishing. Like most powerful packages, the learning is a bit slow at first, but if you are familiar with 'point-and-click', the remaining concepts come easily.

Speaking of desktop publishing – word-processors and dedicated DTP packages have been getting closer together during the last cycle of releases. Steve Keen's comparison of Ami Pro (the current flavor of the month amongst wordprocessing Windows users) and the 'standard' Word for Windows, shows that there is now little between them: simply match your package to the wordprocessing/desktop publish mix of your work.

And – thank you for your continuing support. The response we've had to our new columns for readers (and advertisers, too!) shows you think we are taking the approach you want to see. □

Future Features

IN ADDITION to our application stories, news and other informative pieces, each month we present features designed to keep you informed about the world of personal computing –

October 1990

PC Communications hardware and software and on-line services.

December 1990

Accounting and integrated packages and RISC-based machines.

Application stories – particularly those

with the same theme as our features – are always welcome. Because of lead times, material must be received at least eight weeks prior to the month of intended publication. Please address editorial enquiries on our features to Mark Cheeseman, (02) 693 4143, and advertising enquiries to Mark Wilde, (02) 693 6646.

AMERICAN GRAFFITI



HOWARD
KARTEN

Security and backup

GOOD PROTECTION begins, not necessarily with a lot of fancy hardware or software, but with elementary precautions. For instance, it's now summer in the US, which means it's time for concern about nasty things crawling through the wires and into the computers (and other digital equipment!) and eating the data. (That's if you're lucky, however, if you're unlucky, the nasty little buggers will have a digital hors d'oeuvre, followed by an entree of silicon and a metal oxide desert.)

From time to time, mysterious things happen here, and a piece of one of my files might go missing. When that happens I invariably go bonkers and search compulsively for whatever is missing, often looking in places where I looked only five minutes ago.

As a result, we've taken some precautions. I was spurred to action initially after I bought a microwave oven (for \$7) which had had its 'brains' blown out by a power surge. My knowledge of hot-wiring cars (strictly academic, of course) made me confident that I could perform a lobotomy on the thing and insert a simple on/off switch, which I did. That got me thinking about what a surge might do to our computers, so I bought a handful of inexpensive surge protectors for each computer.

I felt good for a while, until the day of the storm. I was feeling cocky and I kept reading my email despite the lightning. A loud bang from somewhere in the building's wiring sounded particularly unpleasant, and I was rudely disconnected. The COM port never worked right after that. Later, I installed surge protectors on the telephone lines as well, replaced the COM port with a spare communications port I had hanging around, and vowed never again to risk an incident like that.

More recently, Ms Computer writer had a sheepish confession. It seems it had been several months since her last backup. How many? Well ... at least 24. I immediately sent her off to do penance, and at the same time, went to take care of my own backup.

All in all, though, we've been quite lucky. In nearly a decade of using PCs, I doubt that between us we've clobbered

more than half a dozen files. There was one time when I was mechanically formatting disks at the end of a long day and accidentally erased one containing some form letters that had taken me a long time to create, but even then, I had a hard copy backup. (That led to two of the ironclad rules around here related to security and backup – no PCing after drinks; and if you're tired, a 20 minute nap does more good than 20 minutes of alleged work.)

If you're tired, a 20 minute nap does more good than 20 minutes of alleged work.

Another time, long ago, I actually *did* erase a file by mistake. When it became clear fairly soon thereafter what I'd done, I removed the disk, went out and bought software that would resurrect erased files. (A package of utilities available from ButtonWare, called the Baker's Dozen and available through Shareware libraries here, does this and much more.)

Loss caused by your own ineptitude is a totally different matter from prying eyes – or worse – of others. In America, corporate loyalty has eroded (due perhaps to the feverish activity of the past decade of buying and selling companies), and the comity once found in the work-place is said to be gone. No-one on a payroll today can be sure that he or she will be there next week, regardless of the quality of one's work. This has caused considerable fear, suspicion, lack of trust, and other unpleasant behaviors, and I've heard stories of people enciphering files, and suspicions of tampering with spreadsheets.

What this means is that anyone who depends on a computer today can not afford to run it without the proper safety tools at hand. File recovery software is certainly a must-have, and probably some sort of enciphering software as well. (And, don't forget the passwords, as a friend of mine

did one time!)

There are so many stupid things which can go wrong with a computer that it's not possible to catalog them all. If you have oodles of money, then there's no problem – just put a UPS (uninterruptable power supply) on your computer, buy a fancy high-speed tape system and back everything at the end of every day, and get software that will let you encipher everything. (If you *encrypt* it, that's going to mean a midnight trip to the graveyard, and, really, it's only teenagers with raging hormones who enjoy that.)

If you don't have an unlimited budget, there are a couple of things you can do that will serve you quite well. The problem is, they seem so simple and obvious that no-one bothers to do them.

For starters, remember to save your work at reasonable intervals, and backup fixed disks onto floppies or tapes. Next, be sure to get some file resurrection software – think of it as a kind of life preserver. You won't want to shell out a couple hundred dollars for software you hope you'll never need. I assure you, however, that if you *do* need it, you'll need it ASAP, and it will be well worth the price to have it around. Anyway, think of it as insurance – the odds are, if you have it, you won't really need it.

If you have any doubts about the integrity or privacy of your files (I'm trying to be diplomatic), by all means get an encipherment system – you'll sleep better.

Finally, when and if you lose a file, or find one that's lost or corrupted, there are steps to take.

Firstly, take a deep breath, and push yourself away from the keyboard – far enough away so you can't screw things up worse. Now, pick up a piece of paper and start listing possible options you have to recover. Can you download the file from somewhere else? Reconstruct it? Get it from an old backup? From a hard copy? Things may not be as grim as they appear at first.

Finally, bear in mind that you actually remember more than you realise. Lots of things not only *can* be reconstructed, but as you get into it, you'll often remember quite a bit, and perhaps do an even better job the second time around. □

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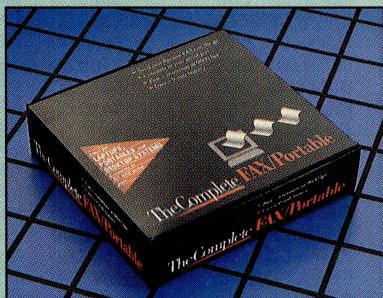
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SOFTWARE

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AMI \$295.00	Deslink \$195.00	Harvard Graphics \$470.00	Allways \$179.00
AMI Professional \$645.00	Gateway V3.0 \$140.00	Lotus Freelance Plus Call	Copy II PC \$55.00
Lotus Manuscript Call	Mirror VER 3.0 \$155.00	Lotus Graphwriter II Call	Desqview 386 \$229.00
MS Word for Windows \$510.00	PC Anywhere \$135.00	PFS First Graphics \$175.00	Desqview V2.2 \$169.00
MS Word V5.0 \$445.00	Procomm Plus \$110.00		Disk Technician Plus \$189.00
Multimate V4.0 \$645.00	Smarterm Series Call		Fastback Plus V2.0 \$185.00
PFS Prof. Write \$219.00	Softerm PC \$435.00		Fastlynx \$220.00
Wordperfect V5.1 \$529.00	Supercom V3.0 \$155.00		Formtool \$175.00
Wordstar 2000+ V3.0 \$385.00			Laplink III \$174.00
Wordstar Prof. V6.0 \$385.00			Lotus Agenda Call
SPREADSHEET	DATABASE	INTEGRATED	Lotus Magellan Call
Lotus 123 V2.2 Call	Clipper \$720.00	Framework III \$790.00	Mace Gold \$210.00
Lotus 123 V3.0 Call	DBase III Plus \$899.00	GEM Presentation Team \$550.00	Mace Utilities \$140.00
MS Excel \$545.00	DBase IV Call	Lotus Symphony V2.0 Call	MS Mouse \$205.00
MS Multiplan \$235.00	DBXL V1.3 \$295.00	MS Works \$195.00	MS Windows 286 \$135.00
Quattro \$210.00	Paradox V3.0 \$750.00	PFS First Choice V3.0 \$185.00	Norton Advanced \$145.00
Quattro PRO \$590.00	Q&A V3.0 \$435.00		Norton Commander
ACCOUNTING	DESKTOP PUBLISHING	LANGUAGE	VER 3.0 \$179.00
Attache 5 Call	Corel Draw VER 1.11 \$795.00	MS C Compiler \$565.00	Norton Utilities \$108.00
Attache Modules Call	GEM Desktop Publisher \$310.00	MS Cobol Compiler Call	PC Alien \$79.00
DAC Easy VER 3.5 \$275.00	Pagemaker V3.0 \$1,295.00	MS Fortran Compiler Call	PC Tools Deluxe
CAD		MS Macro Assembler \$199.00	VER 6.0 \$220.00
Design CAD 2D \$395.00	PFS First Publisher \$159.00	MS Pascal Compiler Call	Security Guardian \$265.00
Design CAD 3D \$449.00	Ventura V2.0 \$1,080.00	MS Quick C \$129.00	Sidekick Plus \$159.00
Generic CAD \$549.00	Ventura with Prof. Ext. \$1,295.00	MS Quickbasic \$129.00	Sideways \$89.00
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Carbon Copy Plus \$235.00	Autosketch VER 2.0 \$229.00	Flowcharting II Plus \$345.00	Spinrite II \$135.00
Crosstalk MK 4.0 \$305.00	GEM Artline \$550.00	Harvard Project MGR III \$755.00	Take Charge \$165.00
Crosstalk XVI \$184.00	GEM Draw Plus \$325.00	MS Project \$490.00	View Link \$175.00
	GEM Graph \$325.00	Superproject Plus V3.0 \$580.00	XTree PRO \$120.00
COMMUNICATIONS		TRAINING	Timeline V4.0 \$810.00
		Type Quick \$80.00	XTree PRO Gold \$150.00

HARDWARE

9 PIN PRINTERS	24 PIN PRINTERS	HARD DISKS	VIDEO BOARDS
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OKI ML 182 \$365.00	Toshiba EW 311 \$599.00	Plus Impulse 80 MB 18 MS \$1,495.00	Paradise VGA Plus \$495.00
OKI ML 182 Turbo \$410.00			
OKI ML 320 \$675.00			
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Epson LX 400 \$375.00			
Epson LX 850 \$410.00			
Epson FX 1050 \$925.00			
Epson DFX 5000 \$3,390.00			
Fujitsu DX 2300 \$550.00			
Fujitsu DX 2400 \$765.00			
Brother M 1209 \$410.00			
Brother M 1709 \$410.00			
24 PIN PRINTERS	LASER PRINTERS	TAPE BACKUPS	MONITORS
OKI ML 380 \$675.00	Toshiba Pagelaser 6 \$2,365.00	Colorado 60 MB Internal \$645.00	Samsung 12" \$165.00
OKI ML 390 \$845.00	Brother HL8E \$3,635.00	Colorado 60 MB External \$880.00	Monochrome \$210.00
OKI ML 391 Turbo \$1,175.00	OKI Laser 400 \$2,350.00	Archive 40 MB Internal \$695.00	ADI DM 14 14" \$645.00
OKI ML 393 \$1,975.00	H.P. Laserjet IIP \$2,895.00	Archive 80 MB AT Internal \$890.00	Monochrome \$675.00
Epson LQ 1050 \$1,149.00	Epson GQ 5000 \$2,950.00	Archive 150 MB Viper QIC02 \$1,245	NEC Multisync 2A \$735.00
Epson SQ 2550 \$2,375.00	Canon LBP8-IV \$2,795.00		NEC Multisync 3D \$975.00
Fujitsu DL 1100 \$725.00	Fujitsu RX 7100 \$2,950.00		EI20 8060S Flexscan \$1,195.00
Fujitsu DL 3400 \$1,185.00			EI20 CAD Monitors Call
Brother M 1224 \$660.00			
HARD DISKS		PC ENHANCEMENTS	NETCOMM MODEMS
	Seagate 20 MB + CONT. \$469.00	Hyper 128K AT \$295.00	2400 In Modem \$465.00
	Seagate 30 MB + CONT. \$490.00	Hyper 256K XT \$275.00	1234 In Modem \$525.00
	Kalock 20 MB 40 MS \$385.00	Hyperace 286 Plus \$445.00	Auto Modem 24/24 \$475.00
	Miniscribe 40 MB RLL \$440.00	Hyperam AT 512K \$475.00	Auto Modem 1234 \$575.00
	Miniscribe 40 MB AT \$640.00	Hyperam XT 512K \$435.00	Smart 2400 SA \$665.00
		Intel Above BD Plus 512K \$930.00	Smart 1234 SA \$745.00
		Intel Above BD Plus 8 2MB \$1,495.00	Smart M4 \$850.00
VIDEO BOARDS			Datalock 123 SA \$895.00
	Ega Cards \$195.00	VGA Cards 8/16 BIT \$295.00	Datalock 1234 SA \$990.00
	VGA Cards 16 BIT \$295.00	VGA Cards 16 BIT \$340.00	Pocket/Rocket 1234 \$540.00
		Vega VGA \$390.00	Netcomm Fax Card \$590.00
		Video 7 1024i \$555.00	

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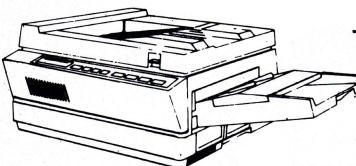
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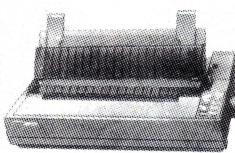
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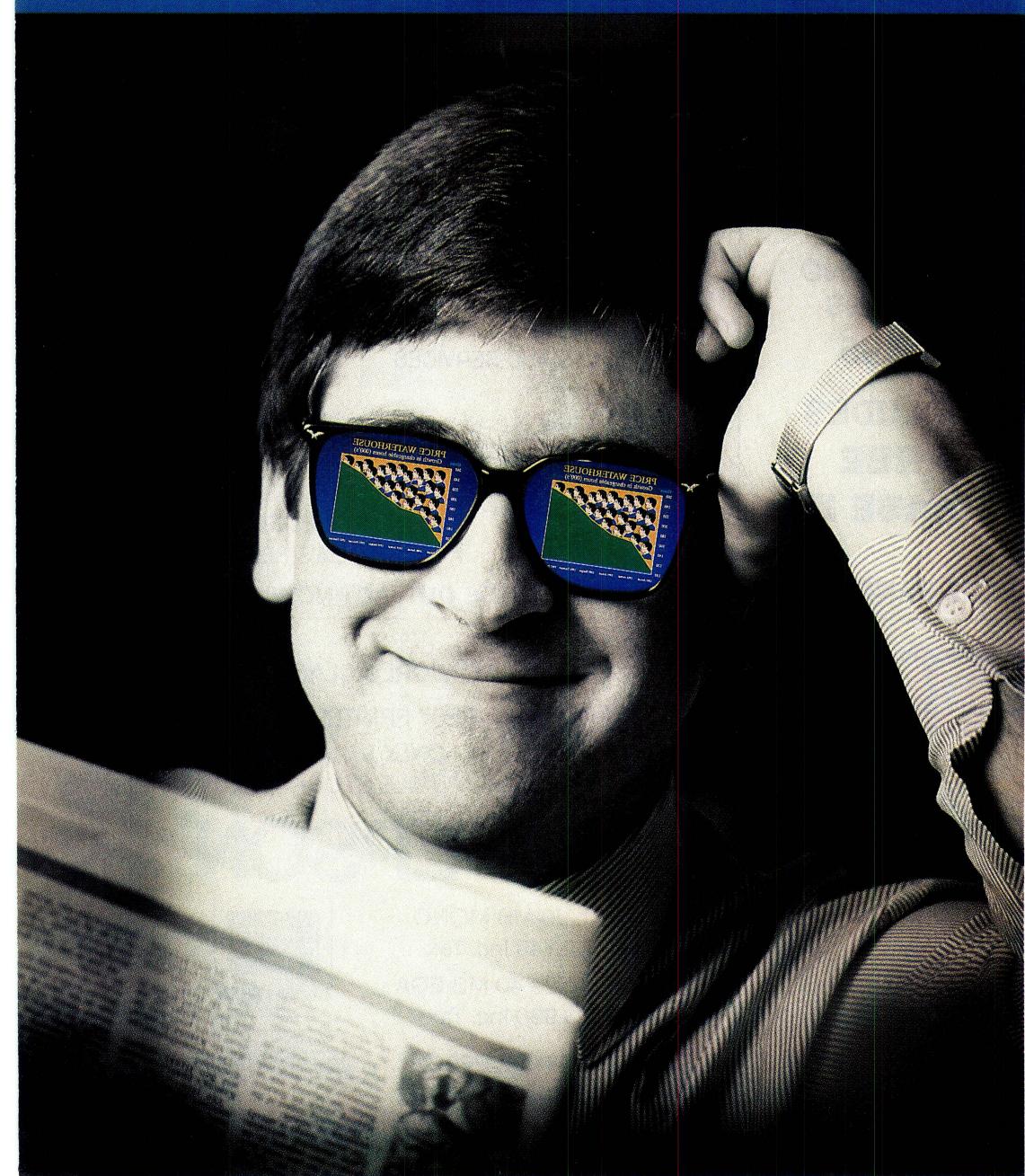
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WILLIAM OLSON

Spending to beat the budget

NOW THAT the silly season for government spending is over, there is time to reflect on the crazy budgeting that goes on in most federal departments at the end of the financial year. The theory is that if you have any cash left over by the end of the financial year, you should shovel it out the door as fast as you can or the finance department will slash your budget next year.

This last minute rush to spend funds results in some haphazard purchasing as all invoices and products must be delivered before the end of June.

One ACT computer supplier recalls delivering PCs in boxes to a government department to beat the June 30th deadline, however, the boxes contained nothing but rocks. The department required PC cartons in its store rooms – they knew the PCs would be delivered eventually, but meantime, they had to have some physical evidence that there were boxes of computers in the stores.

Companies that did well out of government contracts in the last half of the financial year include Computer Power with its taxation department contract of more than \$600 million and Bull HN, L.M. Ericsson and Fujitsu. These last three did well with contracts from Telecom. Amdahl also fared reasonably, earning more than \$20 million from social security contracts.

The taxation department bought new computers partly because it now compels banks to collect tax file numbers from all account customers – not only from new account holders. This financial year, we all have to tell our bank what our tax file number is. Anyone who has not given in a tax file number by the end of June 1991 will automatically have tax deducted from their bank accounts at the highest marginal rate. While the Australia card may have died in 1988, it is now being resurrected under the guise of a tax file number.

Virus alert

VIRUS SEMINARS are fast becoming one of the most popular computer forums in Canberra. Local and overseas experts have been busy telling computer people in the

government sector about the horrors of a virus attacking their systems. Karl Brudell, a local virus expert and programmer for 18 years, believes newer and more deadly computer viruses are on the way, both from the US and Europe. One new virus dubbed '4096', has already turned up in Canberra – a few short months after being first detected in California.

According to Brudell, 4096 is more devastating than previous viruses because it destroys files through crosslinking. 'Another problem is that standard virus checkers will not detect 4096 unless they have very recent upgrades,' Brudell said. And, the US army is now researching computer virus production. 'Their aim is to make a virus that will blitz an enemy computer, destroying files and making it useless for planning military attacks.'

Brudell says that the word 'virus' was first used in a 1983 study of Ms-Dos security levels for the US government. Asked how Australian laws dealt with computer virus makers, he said he believed that new Commonwealth laws which are currently being drafted, would make criminal con-

victions easier. 'However, at the moment, an organisation would probably have more success with a civil action against a known virus attacker.'

Mainframes are more immune from a virus attack than PCs Brudell said, because 'when a virus gets into a mainframe, it generally stays dormant. This is because, it doesn't know where it is – the size of the mainframe disorients the virus'.

Apart from their destructive characteristics, some viruses were an attempt to protect original software from pirates. Brudell said that the Pakistani Brain virus was put together by two brothers who owned a computer shop in Lahore. 'They wanted a simple way of protecting some software they owned, so they wrote the Pakistani Brain virus which only became active when the disk was copied.'

'Most standard viruses work on the boot block sector, such as Zap and Stoned, which was the virus that turned up on some original WordPerfect software earlier this year. Stoned is an interesting boot sector virus because it is too big for the boot block, so it moves the file allocation sector causing file access problems on the disk.'

OS/2 can also be attacked, he said and Unix machines are capable of being infiltrated with viruses.

'One of the biggest problems now is where organisations have powerful desktop machines being run by staff who have done only a two day training course.' Better computer training, Brudell says, is one answer to the virus problem. 'If a business loses a complete system – for example, a large database – then they could be bankrupted.'

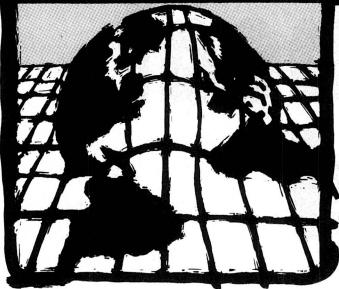
He warned that banks offering business payroll services for customers where disks are swapped between a business and the bank are asking for virus attacks.

There are also viruses now capable of attacking optical drive CD-ROM systems. 'Whereas up to now, most viruses have been made by smart kids on a home computer, the trend now seems to be more vicious than simply mischievous. The 4096 virus is the first of a new more dangerous group of viruses.'



At a virus seminar in Canberra recently Karl Brudell, a local virus expert, told how the US army is now researching computer virus production: 'Their aim is to make a virus that will blitz an enemy computer, destroying files and making it useless for planning military attacks.'

INDUSTRY UPDATES



DCE for OSF

THE OPEN Software Foundation (OSF) has announced plans to integrate several technologies into its Distributed Computing Environment (DCE), which is planned for release later this year. Conceptually, DCE builds upon the open systems strategy pioneered by Unix. In theory, software created for a DCE system will run on that system, regardless of the hardware platform and/or operation system environment. In practice, DCE software is likely to need installation on the system concerned, thus requiring quite complex installation modules and support software.

According to the OSF, DCE will take several of its features from different vendors: Hewlett Packard's NCS/RPC; DECdns from Digital; DIR-X from Siemens; Kerberos Security Service from MIT; PC-NFS from Sun Microsystems; AFS 4.0 from Transarc Corporation; diskless operation from HP and Transarc; LM/X PC from Microsoft; CMA (Concept Multithread Architecture) from Digital; and DECdts time service from Digital.

'486 bargain!

TANDON HAS made what it claims is a major breakthrough in 80486 technology and price performance with the introduction of its 486-sl computer which it has begun shipping to Europe with a representative configuration with 110Mb hard disk selling for under US\$5000.

It is described as a fully IBM compatible, entry-level, 25MHz product. According to the com-

pany, the price/performance breakthrough has been made possible by its MIAT chip set that has integrated memory management functions enabling the product to be manufactured in slimline form. This chip set is said to allow for a flexible definition of caching and shadowing. Tandon also credits the breakthrough to its proprietary circuitry, known as PowerPoster, that is said to enhance the system's throughput.

Win for Stallion

US HARDWARE manufacturer Altos, has signed Queensland company Stallion Technology to ship copies of Monitor, its performance monitoring software for Unix, to the value of around \$500,000. Stallion specialises in Unix applications. Altos will bundle Monitor with the Altos System V implementation of Unix, which will allow users to pinpoint bottle-necks and inefficiencies in the user's system.

Intel to banish CFCs

Intel Corp. is promising to eliminate all use of chlorofluorocarbons (CFCs) by 1992, and calls its decision 'one of the most aggressive programs in industry'. Citing the environmental damage of CFCs, which are known to destroy the earth's thin ozone layer, Intel chairman Gordon Moore proclaimed that his company 'has undertaken an aggressive worldwide program to immediately reduce CFC emissions by implementing good control and conservation practices'.

Specifically, Intel is replacing CFC-based circuit board cleaning equipment with machinery that uses an aqueous-based cleaner. The change affects facilities in Oregon, Ireland, Puerto Rico, and Singapore. The new equipment is expected to be online in all of Intel's Systems manufacturing plants by the end of 1990. Intel says it instituted a comprehensive CFC Tracking Program in 1987 to assemble data of its worldwide usage. Since that time, using control, conservation, and alternative manufac-

ting methods, the company has reduced its CFC use by 30 per cent.

Offsets policy attacked

THE AMERICAN Chamber of Commerce (AMCHAM) has attacked Australia's offsets policy as a mechanism which distorts trade, and channels investment in a particular direction. AM-

CHAM executive director, Robert Maher, said that the general Australian Government attitude distorted trade, and artificially steered resources to unprofitable areas. He gave the example of computer manufacturing where companies importing machines for government tenders had to demonstrate a degree of exports of Australian manufactured products which partly balanced the imports, regardless of the economic sense in producing the exports.

Award for Micro Byte

ADELAIDE PC designer and manufacturer Micro Byte Systems has been presented with an Australian Design Award for the international competitiveness of its PC230 personal computer by the Australian Design Council. Micro Byte began manufacturing specialised computer hardware in 1982 and is exporting to Europe and New Zealand, as well as developing a local user base.



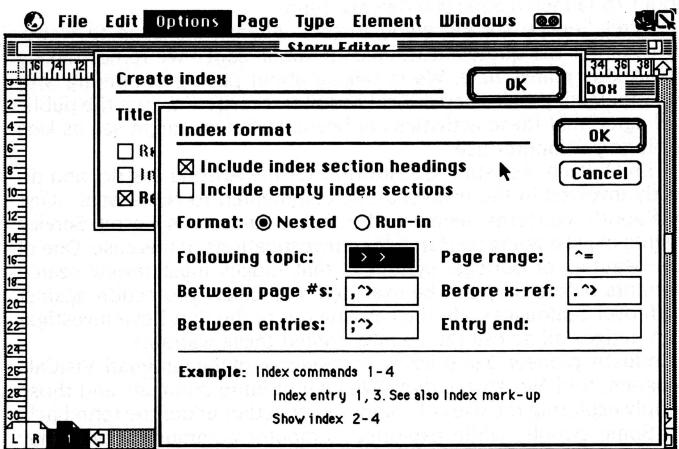
Accepting the ADA award, Micro Byte managing director Greg Watson noted that the company's success was a parallel to the early European settlers who had to overcome the difficult and harsh Australian climate to survive: 'They met the challenge and succeeded in building a great country.' Also pictured are Tullio Carboncini, chairman of the SA division of the Australian Design Council (left), and SA Premier John Bannon, who made the presentation.

At the presentation, managing director Greg Watson noted that the company recognises 'the small size of our local market and by using design as our main tool, we can develop and manufacture products in smaller numbers, cost effectively and target them into smaller overseas markets'.

Two weeks after the presentation, the company was placed into receivership by the ANZ Bank because of internal problems delivering orders on hand. As an industry observer noted, the problems were strictly internal and the company has 'no lack of business'.

Mac PageMaker 4.0

Aldus distributor Infomagic is shipping the PageMaker 4.0 for the Macintosh. The new version includes improved wordprocessing capabilities, expanded typographic controls, and enhanced features for handling long documents. 'With more than 75 new features and enhancements, PageMaker 4.0 represents the beginning of a new era in desktop publishing,' a spokesman for the company said. PageMaker 4.0 is the most complete tool for writing, designing and producing a wide variety of high-quality publications,' he added.



Infomagic is now shipping PageMaker 4.0 for the Mac – the most interesting new feature is the story editor, a builtin wordprocessor which allows users to remain in a single application to complete most of their work.

Heading up the features list of PageMaker 4.0 is the story editor, a builtin wordprocessor which allows users to remain in a single application to complete most of their work. The recommended system configuration for PageMaker 4.0 is an Apple Mac SE/30, II, IIx, IIcx, IIci, IIfx or Portable, plus a hard disk and 2Mb of RAM. The minimum system configuration is a Mac Plus or SE with 1Mb of RAM and a 20Mb hard disk.

The price of PageMaker 4.0 is \$1298, the upgrade from version 1.0 to 4.0 is \$445, from 2.0 to 4.0 is \$299 and from 3.0 to 4.0 is \$269.

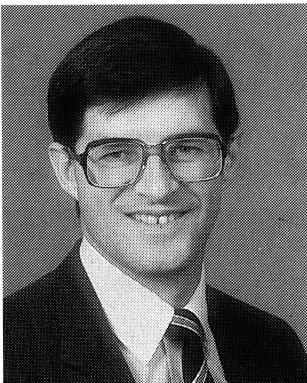
Computing skills shortage

NEW SOUTH Wales colleges have experienced a 22.9 per cent drop in the number of students enrolled in computing courses. This announcement follows the call earlier in the year by the Information Industries Education and Training Foundation for the number of computing graduates to triple by 1999 to keep pace with demand.

Geoff Turnbull, president of the Technical and Further Education Teachers Association, blames the decrease on recent

restructuring measures taken out by the NSW government, while a spokeswoman for the NSW education minister claims these measures have led only to a 'readjustment' of enrollment figures. Either way, the figures do not bode well for an industry already suffering from a drought of skilled workers.

In a move to help alleviate Australia's technology skills shortage, OTC, Australia's international carrier, has announced a plan to contribute \$1.3 million



Terry Baker, IBM Australia director and assistant general manager, operations, said IBM has donated \$1 million worth of computer equipment so that 'teachers will benefit through opportunities for greater contact with business, and a more direct understanding of the application of leading edge technology'.

in educational funding.

The launch of the plan featured Steve Burdon, OTC's managing director, and Dr Terry Metherell, New South Wales state minister for education, as well as an exhibition by students from six new technology high schools. 'At a time when technology is having an increasing impact on our lives, we have fewer students attracted to technology-related subjects in our universities. The new education strategies announced today represent a major commitment to encouraging more young Australians into technology-related careers,' said Dr Metherell.

IBM is also addressing the computer and technology skills shortage. The company has donated \$1 million worth of computer equipment, software, support services and teacher training to one of the recently announced technology high schools in NSW. The aim of the school is to provide future students with the skills needed to enter technology-related careers.

C with Objects

IBM JAPAN has created a new C programming language. Named COB (C with Objects), the new

language incorporates several object oriented features. C++ from AT&T, is also a major object oriented language based on C, but IBM Japan claims that its COB is superior in that it has enhanced features to find and erase errors or bugs. Also, IBM Japan says its language enables a program to be created in one-tenth the time that the C language requires.

Slump for contractors

INDUSTRY OBSERVERS believe that the computer industry slump in Australia, has spread to contractors. This follows a move by a number of large banks and companies to cancel contracts and bring work in-house. Westpac has terminated 50 contractor agreements, saying it was time to 'stand back and assess the situation'. The move means an estimated saving of \$4 million per year. Other corporations have reportedly cut contracting staff by around 50 per cent over boom periods of 18 months ago.

Personnel placement agencies say that the situation has reached a position where for the first time in many years there is an over-supply of computer professionals in the market. A statement by National Australia Bank said that there is a house policy of increasing in-house staff to replace contractors.

BHP anti-piracy seminars

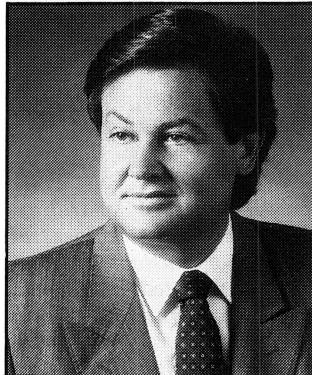
BHP IS THE first of more than 15 major Australian companies to organise software compliance seminars through the BSA Software Australia (BSAA), the Australian organisation which is campaigning against software piracy.

The first seminar involved all relevant staff at BHP's Newcastle operations, and was aimed at explaining to employees BHP's stand on the illegal introduction of software into BHP computers. Conducted by Glenn Miller, managing director of Ashton-Tate Australia, the seminar detailed a wide range of issues relating to software piracy including basic definitions, detailed software budgeting and compliance procedures.

Ramtron opens US chip plant

IN A MOVE to aid the centralisation of its five US facilities, Ramtron International Corp. (Ramtron Australia's US subsidiary) is finalising the construction of its headquarters and manufacturing plant in Colorado Springs. The \$26 million facility will begin operation this month and will design and produce memory chips based on Ramtron's Ferro-electronic Random Access Memory (FRAM) technology. [For a discussion on FRAM technology, see 'A RAM that doesn't forget' in our April issue.] The facility's clean room has already received independent certification. The FRAM chips are designed to be non-volatile (that is, they do not lose data in the event of power loss).

The start of production at the new plant comes at a time when Ramtron Australia is recommending shareholders to approve the issue of up to five million special preference shares at US\$2. The funds raised by this private placement will be used by Ramtron to maintain its majority ownership control of Ramtron International.



Commenting on Ramtron's new US venture, Brian Harcourt, chairman of Ramtron Australia, commented that 'the manufacturing agreement for the speciality DRAMs together with alliances with Seiko-Epson and ITT semiconductors increases our manufacturing capabilities to \$390 million annually, without the need for further capital investment on Ramtron's part'.

Aid for hackers

MITCH KAPOR, founder of Lotus and developer of 1-2-3, is interested in the establishment of a defense fund to aid the hackers implicated in the US Secret Service's Operation Sun Devil investigation. Kapor said: 'It's plausible that there's a witch hunt going on,' and confirmed his involvement to Newsbytes saying that reports of heavy handedness by Secret Service agents and questionable allegations have made him extremely concerned about this issue.

'There have been reports on the Well (a California based online service) of Secret Service agents accosting 14 year-olds at gun-point as though they expected armed resistance. The reports are pretty outrageous. Additionally, there have been only a few indictments to show for the mass confiscation of equipment that went on. These actions have a chilling effect on bulletin board operators throughout the country. If the allegations of the use of terrorist search tactics are accurate, it's certainly disproportionate to the acts under investigation.'

Kapor told Newsbytes he is attempting to collect information on the specifics of the early May Sun Devil execution of 27 search warrants at suspected hacker's homes. These searches, which resulted in

the seizure of approximately 40 computer systems, are the subject of many of the complaints that have reached Kapor. He says it's difficult to collect the data to get a complete picture of the case. There has been very little specific information released by the government, he added.

He added that he is working with the two law firms, Silvergate & Good of Boston and New York's Rabinowitz, Boudin, Standard, Krinsky and Lieberman to obtain as much information as possible concerning these cases. 'When we have enough information to get a better picture of what's happened here, we'll decide what steps we may take,' said Kapor, referring to a published statement that he was about to launch a \$200,000 defense fund.

Secret Service spokesperson Richard Adams, speaking to Newsbytes about the quotes attributed to Kapor, said: 'We're not talking about kids pranks here. We're talking about people tampering with 911 emergency codes and critical hospital records. I'm sure the public will agree that these activities are beyond what we might see as kids exploring computer use.'

Tim Holtzen, Assistant US Attorney for the Arizona District and directly involved in the investigation, commented to Newsbytes: 'One of Kapor's concerns seems to be that over-zealous Secret Service agents may be going too far in their investigations of this case. One of the beauties of our legal system is that judges must review search warrants before they can be executed as a safety protection against such over-zealousness. In the carrying out of the Sun Devil investigation, judges all across the country signed these warrants.'

Industry pioneer Dan Bricklin, codeveloper of the landmark VisiCalc program, told Newsbytes that, 'We cannot lump criminals and those simply exploring the uses of computers together under the term hacker. Some people, while exploring computer communications, may perform inappropriate actions but, if they are without malice, they may not be criminal activities. There are certainly criminals using computers but we must be able to distinguish the difference.'

'Most computer bulletin board operators set them up because they believe deeply in opening lines of communications to the public. Should their equipment be seized because someone else puts illegal information onto the system? If we extend the logic of such seizures, what happens if I call a major corporation and leave an illegal item on its voice mail system? Will the government seize the corporation's telephone system? There are many troubling issues here and I applaud Mitch's involvement.'

Steve Wozniak, cofounder of Apple Computer has pledged his support to the efforts initiated by Kapor. Speaking to Newsbytes, Wozniak said he called Kapor as soon as he heard about his efforts and pledged to give financial and other support. 'This is a cause that I have been interested in for a long time. The public just doesn't understand the things these people are charged with. They just aren't bad enough to warrant the kind of over-reaction that we've seen – the seizure of computers and the like. It's like being parked for 40 minutes in a 30 minute zone. You may get a ticket, but they don't confiscate your car.'

Parliamentary summaries

A COMPUTER program which summarises English text is being tested for three months by the Australian Federal Parliamentary Library. Computer Power Group's Artificially Intelligent Document Analyser (AIDA) reduces English language documents by approximately 90 per cent, according to CPG's chief scientist Dr Richard Jones – some Senate reports have been reduced to 2 per cent of their original size.

By searching for key phrases ('in conclusion', for example), or by noting repetition of points, AIDA is able to perform the job of a skim reader while still conveying the salient points of the document. AIDA will be used by the Library to analyse in-house and external documents to provide the information contained in easy-to-read format for parliamentarians and departmental staff.

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P.D.Q. Ver 2.00 (Pretty Damn Quick) - Assembler library replaces BCOM45 etc, Uses Microsoft Basic Compiler - BC.EXE to compile, Up to 90% executable code size reduction, Very fast, Built-in TSR support, Multiple interrupt hooking, Supports huge arrays and /d debugging. Full BASIC 7 compatibility, Source code included.

QuickScreen (Screen Painter/Forms Editor) - Box/line drawing, Backgrounds, Define data entry fields, Field by field editing with full validation, Automatic field calculations, Screen display video effects.

GraphPak Professional - High level & Low Level Graphics routines, 3-dimensional bar, Pie and line graphs, Font and tile editor, Screen print to Epson or HP compatible printers, Load/Save in .PCX format.

QuickPak Scientific - Subprograms for scientists and engineers, Linear Algebraic Equations, Ordinary Differential Equations, Numerical Integration of Functions, Numerical Differentiation of Functions, Root Finding, Min & Max of Functions, Curve Fitting.

Dialogic - Generates text-based dialog boxes just like those used in Microsoft's QuickBASIC & QuickC editors.

LaserPak - Complete set of BASIC subroutines for controlling an HP LaserJet or compatible printer. Draw Lines, Boxes, Circles, Select Fill and Shading patterns.

QuickHelp - Complete help message system to add instant pop-up help to any application, requires only 22K of DOS memory.

QuickMenu - Full-featured DOS menu system for novices, and experienced users alike.

Software Interphase

QuickWindows Ver 2.00 - Window management library, 170 functions, Menus, Dialog boxes, Messageboxes, Help screens, Fonts, Supports 800x600 graphics modes, EMS support.

Designer QuickWindows - Object-orientated screen-layout tool for setting up screens, Windows, Menus and Dialog boxes. It then generates QuickBASIC code. (requires QuickWindows)

QuickComm - Interrupt driven, Ring-buffered communications library, 76 functions, Supports up to 16 serial ports to 115K baud, Includes XMODEM, YMODEM, YMODEM-Batch file transfer support.

AJS Publishing

db/LIB - Database management library, Fully Dbase III compatible, High-speed B-tree index building and access, Open up to 255 data, index or memo files, Built-in query system, Support for File & Record Locking on Networks and Crescent's P.D.Q. available.

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CompuFarm

THE COMMONWEALTH Department of Primary Industries and Energy and the Commonwealth Development Bank are jointly sponsoring CompuFarm, a software design competition to develop a computer-based farm financial education package in the form of a game. Chairing the panel of judges is the director of the Commission of the Future, Dr Peter Ellyard.



'Strong financial management skills and the use of the most up to date technology go hand in hand to ensure Australian agriculture remains competitive on the world scene' – Federal Primary Industries Minister, John Kerin, at the launch of the \$60,000 CompuFarm competition.

There are two categories to the competition. The open category is for all individuals and companies – first prize is \$20,000 and two runners up will each receive \$5000. The educational category is restricted to students and staff from educational institutions (entries must be in the name of the institution) – first prize is \$20,000, with two runner up prizes of \$5000. The closing date for entries is December 31, 1990.

For details, contact the Department of Primary Industries and Energy, GPO Box 858, Canberra 2601 ACT; (06) 272 4522.

Wozniak contends that young people are simply trying to learn to use computers and systems. 'There has never been allegations of hackers gaining one cent from these activities. Their only profit has been in learning more than they knew before about systems and this winds up benefitting society.' He believes that media hysteria is responsible for the prevailing attitude toward hackers. 'A lot of people believe that medical records, stock market data and other important things could have been lost. The public should realise that all important data is backed up and secure.' And, 'hackers do not, by in large, destroy things or profit financially from their computer use. The media and, therefore, the public has young hackers confused with white collar criminals.'

Ausgraph '90

AUSGRAPH '90, the eighth annual conference on computer graphics, organised by the Australasian Computer Graphics Association, is being held at the World Conference Centre, Melbourne, from September 10 to 14. In conjunction with the conference, there is a computer art contest with four categories: artistic merit, technical achievement, business graphics and the school student's award. The contest spon-



(c) 1989 Wally U. Kalnins "Barrenjoey Head Moonrise" (3D_68)

'Barrenjoey Head Moonrise' is one of a group of works by Wally Kalnins which won the Ausgraph '89 Technical Achievement Award.

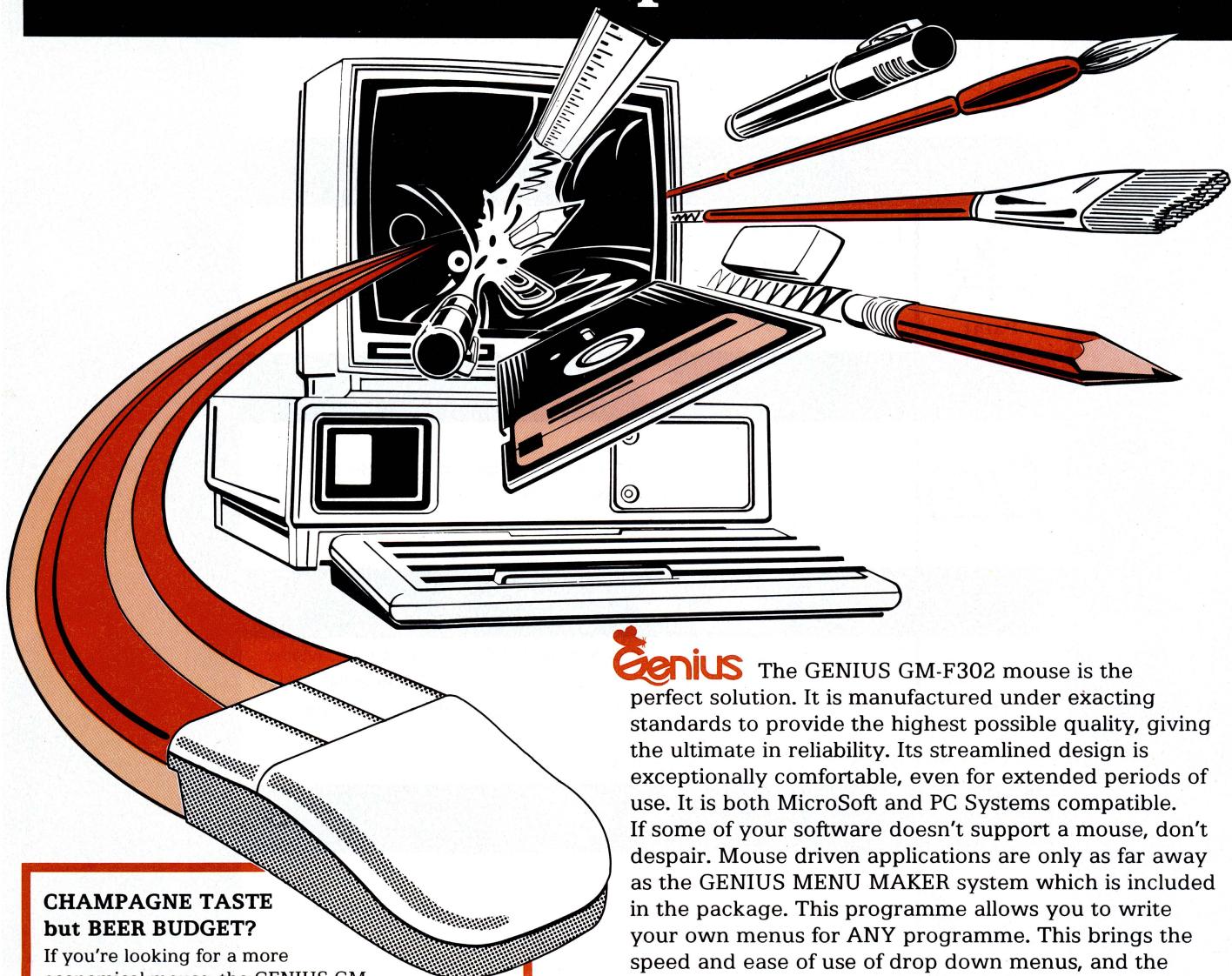
sors are Pansophic Graphics Systems, Computerworld and Technical Imports Australia. There is also an animation contest for non-commercial animation pieces, sponsored by Vision Control. For further information contact the Ausgraph secretariat on (03) 387 9955; fax (03) 387 3120.



The winner of the Tektronix ColorQuick printer in the competition that ran in our March and April issues was Charles Bayl (left) of Cowra, NSW. Bayl has his own presentation drawing business and the printer came at the right time: 'I've got several major jobs on at the moment, so I can hardly wait to get the ColorQuick up and running.' David Gradwell, national sales manager for Tektronix (right), made the presentation at the company's Sydney head office.

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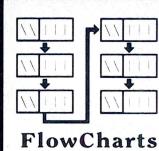


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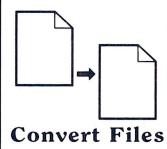
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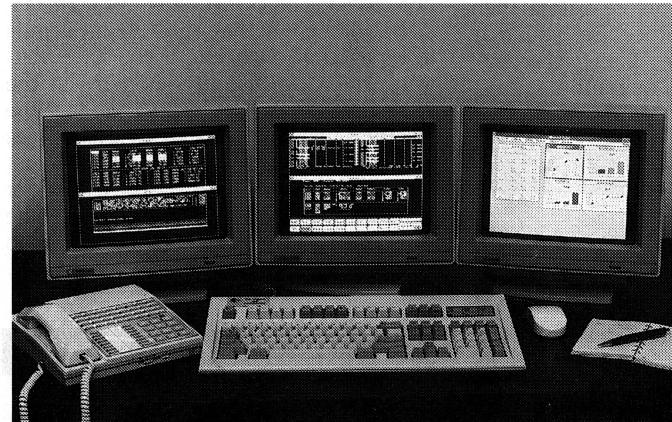
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Fifth generation update

THE EIGHTH symposium for the fifth generation computer development project was held at Kudan Hall, Tokyo. The symposium has been held every year to present the progress of research to the public, and as the project goes into the home stretch, there was evidence of real progress.

Still, Kazuhiro Fuchi, director of the Institute of New-generation Computer Technology or ICOT, sought to dispel popular myths about the project when he said, in his keynote address, 'We do not want you to over-estimate our project. This project is aiming to establish certain basic technology which is expected to contribute to the coming fifth generation computer age and does not mean creation of a fantastically new computer'.

ICOT defines the history of computer development as follows: the first generation consisted of computers made with vacuum tubes, the second generation had transistors, the third generation had ICs (integrated circuits), the three point five generation had LSI (large-scale integration) circuits and the fourth generation had VLSI (very large-scale integrated) circuits. All of these computers are called von Neumann type computers and are represented by a sequential processing architecture.



Australian high-end PC dealer Co-Cam has released the Windows 3 version of its popular CityDesk financial dealing room delivery system. The product is said to have much greater power through the ability of Windows 3 to crack the 640K memory barrier. Users can track multiple financial services live, through separate windows. In addition, local processing tasks don't stop data updating through phone links. The software costs between \$3000 and \$7000 depending on the installation, plus an annual maintenance and upgrade charge of 15 per cent.

In 1982, the Japanese Ministry of International Trade and Industry (MITI) announced the fifth generation computer development project to develop a computer which infers and solves problems with knowledge-base management ability.

Other technologically advanced countries followed suit. In 1983, Microelectronics and Computer Technology Corp. (MCC) was organised by leading US computer makers, including DEC, CDC and Honeywell. The Defense Advanced Research Project Agency (DARPA) started a 10-year Strategic Computing Project in 1984. In the same year in the UK, the Department of Trade and Industry started the Alvey Program. Other European countries, such as France and West

Computer junkie quotient

Paul Zucker and Newsbytes decided to give you a formula that calculates your 'computer junkie quotient'. It's of absolutely no scientific value, but it's a bit of fun to work out -

While designing the formula, I realised that demographers, sociologists and advertisers already have a method of classifying us according to education, income, social position and so on. Perhaps we should take the ball and design a real designation system for people involved in computers. What a boon to the advertisers - I can hear them saying '... and this campaign is aimed squarely at the 0100,0011,0111,1000 group, with a bit of scatter onto the 0100,0111,0111,1000s'.

Now for the computer junkie quotient formula:

$$\text{Computer Junkie Quotient} = (20A + B + 10C - 5D + 5E + 6F + 7G + 20H)$$

where:

A is the number of computer screens you can see as you sit at your desk.

B is the number of computer books and computer software packages you can see from your desk.

C is the number of computer journals that you get on your desk each month.

D is the number of telephone numbers you can remember without any mechanical aids, and write on paper within one minute - start NOW!

E is the number of disks and tapes on your desk at this moment.

F is the number of discrete pieces of electronic equipment within two metres (six feet) of your desk.

G is the number of computer packages you use within a week.

H is the number of domestic applications you have committed to the computer (such as a database of your LPs, a list of birthdays and so on).

Any quotient over 500 falls into the DS/DD quintile, 400 to 499, SS/DD; 300 to 399, HD; 200 to 299, SS/SD, 100 to 199 LD; below 100, FLOPPY.

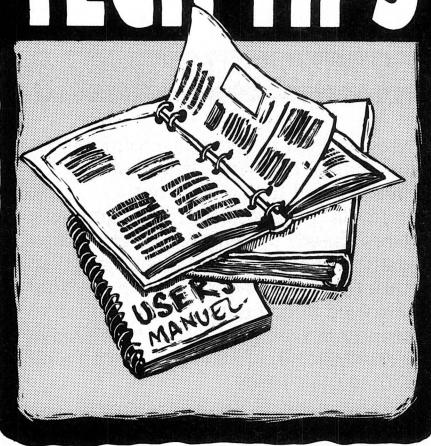
Germany, started projects, and European private firms, Bull, ICL, and Siemens, established cooperative institutes to study a next-generation computer.

The 10-year project is divided into three stages. The first three years is devoted to development of the basic technology, the second four years for application and further development of the technology, and the last three years for development of a prototype fifth generation computer. This symposium is the first announcement of progress in the last stage of the project.

Fuchi's speech, while reflecting some difficulties in the area of development, did show what many experts considered remarkable progress in the area of research. ICOT has developed a kernel language based on Prolog which has undergone several revisions, and the latest is called KLI. The operating system for PIM (parallel inference machine), called PIMOS (parallel inference machine operating system), has been developed on the Multi-PSI, the machine configured with 64 processing elements (PE) in parallel. Five architectures of PEs for PIM, have already been developed and test versions were exhibited at the symposium.

The symposium demonstrated a prototype LSI circuit layout system and a legal consulting system. The LSI CAD (computer-aided design) system defines the most effective circuit layout and the legal consulting system infers a reasonable judgement from its database of judicial precedents with arguments. The project leaves only two years for the development of a working prototype. Research is being contributed by the Argonne National Laboratory in the US. The demonstrations shows that the project will bear fruit in the future. □

TECH TIPS



If you have any technical advice or hints on using hardware and software that might interest others, drop us a line and we'll pass them on. If you have a PC problem that's been bugging you, send it in, and we'll try to help. Write to: **Tech Tips, Your Computer, PO Box 227, Waterloo 2017 NSW.**

Garbage from modem

I have a problem with my modem producing garbage. The problem does not occur all of the time, but after 12 or 13 minutes online, my screen fills with rubbish. Telecom couldn't offer any help - they said the line is OK, and the modem seems all right, since it works fine on a friend's phone line. Can you offer any help?

**Dr David Spiniker
Fashion Village NSW**

It sounds like you have one of Telecom's new T200 Touchphones. These phones periodically draw current from the phone line to keep their memories powered. When this occurs, the extra loading on the line causes distortion, which corrupts data communications. A quick fix is to unplug the T200 when you are using the modem - hopefully, it won't forget its memory numbers. Another alternative is to ask Telecom for a current sharing device, which allows the phone to re-charge itself without messing up the modem.

Another problem to watch is related to Easycall, specifically the Call Waiting fa-

cility. When somebody tries to call you while the modem is using the line, the call is momentarily interrupted while the call waiting pips are transmitted. This causes garbage to be received by the modem until it determines that there is no carrier and hangs up in disgust. The simple solution is to disable the call waiting before using the modem, and to re-enable it afterwards.

Another solution is to add two entries to your dialing directory - one to disable call waiting and the other to enable it again. Then, dial the first entry at the beginning of a session, and the other after you have finished using the modem. A more automated approach might be to put the disable sequence in the modem initialisation string itself, so that the call waiting is automatically disabled whenever you fire up the comms package. This still leaves the problem of re-enabling the facility when you have finished with the modem. If your comms program can send a string to the modem before exiting, then this could be used, otherwise, you may have to resort to the dialing directory solution above for this operation.

Four serial ports

I have four serial ports on my computer (a 12MHz Everex AT), addressed as COM1 through COM4. However, while two of the ports work without any problems (COM1 and COM3) the other two do not work reliably. I have two different modems, on COM1 and COM4, a Mouse Systems mouse on COM2, and I use COM3 to connect to my laptop with LapLink III. Whenever I try to use the modem on COM4, it does not work unless I move the mouse a bit. After that, I don't have any problems with this port, but when I exit the communications program (Telix 3.12), the mouse refuses to work again until I reboot. Do you have any suggestions?

**Jennifer Cox
Ajana WA**

This problem is related to the way in which the communications capabilities of the PC have evolved. The original PC, and Dos, only supported two serial ports - COM1 and COM2. Each of these was allocated a specific I/O address and interrupt line. When users started demanding more I/O capabilities from their machines - especially with a mouse taking up one of the serial ports - COM3 and COM4 were

introduced in some software, and in Dos itself from version 3.30 onwards.

However, because of the shortage of interrupt lines (especially on XT-level machines), they have to share the same interrupt lines as the first two. That is, COM1 and COM3 share interrupt 4, and the other two share interrupt 3. Normally, this should not cause a problem since the chip which controls each serial port (the UART) has a register which the software can read to determine whether that chip caused the interrupt or not.

Problems can arise, however, when the software that is controlling the port (such as the Mouse Systems mouse driver) assumes that there is only one port on that interrupt line. It receives an interrupt from the other port on that interrupt line, but doesn't know what it is for, so it appears to hang.

One solution is to arrange the serial ports so that the shared interrupt lines do not cause conflicts. For example, put your two modems on COM1 and COM3. The assumption here is that only one modem is to be used at once, and if you have software which can use two modems at the same time, it is smart enough to share the interrupt line between the two. This leaves COM2 for the mouse (which usually must be on COM1 or COM2), and COM4 for LapLink. Since LapLink doesn't use the interrupt line at all, there should be no conflict here.

Archiving programs

What is the best file compression/archiving software to use? I have seen ARC, ZIP and LZH file extensions, and I understand that they all use different techniques to compress data? Are all of them incompatible with one another?

**C. Williams
Jeeralang Vic.**

As is the case with most decisions in life, there is no simple answer to this, owing to the rather checkered history of PC archiving programs in general. The first PC archiving package to appear on the scene was Systems Enhancement Associates' ARC. This not only provided a means of compressing files to make them smaller on BBS's hard disks and faster to transmit, but also allowed several files to be combined into a single 'archive', so that a program file, its overlays and documentation could be distributed as a single unit

without the danger of a vital part of the program going astray.

Since the appearance of SEA's ARC, archiving files on bulletin boards became almost universal. PKWare, an American company, thought that it could do a better job and released PKARC, which was faster than ARC in compression and decompression. However, in an effort to standardise on the ARC file format, PKARC used the same file compression techniques (with one addition) and file formats, so that files created by the two programs were compatible.

Since PKARC was faster than ARC, and had an additional compression algorithm built-in, it became the preferred compression program. SEA didn't like this, and in typical US style, took PKWare to court, although the two ultimately settled out of court. The settlement basically meant that PKWare could no longer market products which used SEA's compression techniques, and it could no longer use the term ARC. Yet another standard bites the dust!

PKWare changed PKARC and PKXARC to PKPAK and PKUNPAK, using the PAK file extension, and later changed to PKZIP and PKUNZIP. The latter programs were even faster than any of their predecessors – for a full report, have a look at John Hepworth's 'IBM Underground' column in the May 1989 issue.

A relative newcomer is LHARC, which creates files with the extension LZH. This is a favorite among BBS Sysops because it creates the smallest files of any compression program, thus maximising valuable disk space and reducing file transfer times to an absolute minimum. The penalty is speed – it's much slower than ZIP or PKARC.

So the real answer to your question is 'it depends'. If you are compressing files for transmission over expensive phone links, or to cram the absolute maximum amount of data on a disk, then LHARC is probably for you. However, if you are looking for a quick way to backup your work directory at the end of each day before going home, then speed is probably more important, so PKZIP would be a better choice.

By the way, if you are fortunate enough to have a modem with MNP-5 data compression, don't expect it to transmit compressed files any faster than normal – MNP-5 is just another file compression system, and files which are already compressed don't compress well a second

time, so the transmission speed will not improve much, if at all. Note that the slight increase experienced with MNP-4 will still occur with compressed files, since this is achieved by removing the start and stop bits before transmission, not by compressing the file.

Fast format for Dos floppies

I don't think anybody actually likes formatting floppy disks – but unless you are prepared to squander big handfuls of dollars on factory pre-formatted ones, the occasional formatting session is a necessary task.

Formatting is inescapable for new floppy disks, but the job can be made easier for used floppies that just need to be tidied up by removing unwanted files to leave the space readily available. Commodore users never fail to boast about their fast format option, and here is a way to make the same utility available for the IBM. Admittedly, you can log on to the appropriate floppy drive, perform a DEL *.*, then change back to your working directory. FFORM.BAT will achieve the same result in a faster and easier manner – and isn't that what using a computer is all about?

To achieve such a result, though, we will need to delve into a bit of theory (not to mention the intricacies of Debug). Have no fear, it all works out easily in the end.

The first sector (sector 0) on any MS-Dos floppy disk is the 'boot sector', which holds a record of important information like the Dos version, disk type, location of system files and so on. That need not concern us here, except that this sector should not be disturbed.

Immediately following the boot sector are the sectors containing the file allocation tables, or FATs; two copies in case one becomes contaminated. Following these are the file directory sectors. When accessing a disk, Dos uses these portions of the disk as a 'road map', first finding the required file in the directory, which holds a pointer to an offset in the FAT giving the particular physical location on the disk where the file is written.

So, in order to fast-format a floppy disk, all we need to do is to overwrite the FAT and directory. Dos thinks the disk is completely vacant because it can't find any files. FFORM's high speed results from the

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ANSI.SYS

THE DOS ansi.sys file is a source of mystery for many people, who either install it in their config.sys file and then forget about it, or just forget about it altogether. However, with a bit of effort, it can be used to customise the screen and keyboard of the computer.

The ansi.sys driver replaces the standard console (CON:) driver in Dos, and allows much more control of the screen and keyboard than the standard driver. This control is exercised through escape codes sent to the driver, which is as simple as sending the character string to the screen with an *echo* statement called from a batch file.

Alt-key combinations:

Alt-Key	Alt-Code	Alt-Key	Alt-Code	Alt-Key	Alt-Code
1	120	A	30	N	49
2	121	B	48	O	24
3	122	C	46	P	25
4	123	D	32	Q	16
5	124	E	18	R	19
6	125	F	33	S	31
7	126	G	34	T	20
8	127	H	35	U	22
9	128	I	23	V	47
0	129	J	36	W	17
-	130	K	37	X	45
=	131	L	38	Y	21
	M	50	Z		44

The ANSI escape codes interpreted by ansi.sys are all of the form <ESC>[, followed by one or more numbers separated by semicolons, and a letter, which is the actual command. The most common command is 'm', which is used to change the character colours and attributes. For example, <ESC>[32;40;1;5m will give you flashing bright green text on a black background. You can also put these codes in your prompt statement in autoexec.bat, to control the colour of the prompt. In this case, the escape code is replaced by \$E.

These codes are well documented in the Dos manual, in the appendix covering installable device drivers, so we won't present a full coverage here. ANSI escape codes can also be used to change the video mode, clear the screen, and move

the cursor around the screen. And, they can be used to re-define the function of any key on the keyboard. This latter feature is not documented at all in most Dos manuals, but is one of the most potentially useful.

For example, you can re-define the function keys, or define functions for those which are undefined. Say, you might want Alt-F10 to park the hard disk. To do this, the escape code is <ESC>[0:113;"park";13p.

The general form of a key-definition escape code is: <ESC>[N1,N2,...Nxp

The first one or two digits represent

Function key codes:

Key	Alone	Shift	Ctrl	Alt
F1	59	84	94	104
F2	60	85	95	105
F3	61	86	96	106
F4	62	87	97	107
F5	63	88	98	108
F6	64	89	99	109
F7	65	90	100	110
F8	66	91	101	111
F9	67	92	102	112
F10	68	93	103	113

Note: All key codes above are preceded by a '0'. Keys not shown here return their assigned ASCII code.

the key being defined. If the key is a normal key which has an ASCII code (such as an alphanumeric key, either alone, shifted, or with control), then the ASCII code is the one which is used here. For function keys, cursor-control keys, and Alt-key combinations, the first number is zero, followed by the code given in the table below.

All subsequent digits are the ASCII codes of the characters in the key definitions, separated by semicolons. However, a string of alphanumeric characters can be represented by putting the string itself in quotes (as in the 'park' example, above), rather than as a series of semicolon-separated ASCII codes. The '13' at the end of that particular string is of course the ASCII code for the carriage return at the end of the park command.

fact that no files need to be actually deleted, because once it is misled into the idea that the disk is empty, Dos will go ahead and write new files over the unwanted data, putting details about the new files

into the now vacant directory and FAT. Different disk capacities have different sector structures, ranging from 11 sectors on 360K disks, to 34 sectors on 1.44Mb high-density numbers.

If we write a program to 'null-out' 32 sectors, it will work equally well on all disk sizes – since we are overwriting the data on the disk anyway, a few extra sectors zapped on the smaller disks won't make much difference. To achieve this, we can redirect a little SCRIPT (.scr) file into Debug. It sounds a bit complex, but is easy enough to understand once you know what all the incantations mean! Remember that to Debug, your a: drive is Drive 0, your b: drive is Drive 1, and all numbers are hexadecimal. To fast format a floppy in drive a: use –

```
F 100 L FF00 00
;Fill memory, from location 100,
Length FF00 bytes,
;with 00 hex (null character)
W 100 0 1 20
;Write, from memory location 100,
to disk drive 0,
;starting at sector 1 and ending at
sector 20
0
;quit
```

If you have two drives, you will need a FFORMB.SCR file, writing the same number of null bytes to Drive 1. You can easily type tiny files like this straight from the keyboard. And, there is no need to type the comment lines (those beginning with a semicolon). From your Dos prompt just type the following lines, finishing each line with the Enter key –

```
COPY CON FFORMA.SCR
F 100 L FF00 00
W 100 0 1 20
0
`Z
```

The final Ctrl-Z character may be entered that way, or by pressing F6. Dos will write the file to disk, and you may repeat the operation for FFORMB.SCR, substituting for the second line – W 100 1 1 20.

That's got the awkward part finished. Now all we need is a batch file to tie it all together, and make the operation both automatic and transparent to the user. This batch file may be written using a word processor that will output pure ASCII, or EDLIN, if you are familiar with the syntax.

FFORM.BAT accepts as a parameter only a: or b: – it definitely won't do anything disastrous to your hard drive! If the

user enters the command without giving a drive letter, a help screen is displayed, prompting for the correct syntax. The screen display mimics that of the standard FORMAT command.

```

@ echo off
REM help screen if no drive parameter
entered
if %1==x goto nparam
if %1==A: goto adrive
if %1==a: goto adrive
if %1==B: goto bdrive
if %1==b: goto bdrive
REM can't have it formatting the hard
drive!!
echo You must specify either A: or B:
drive
goto end
:adrive
REM might as well mimic the DOS
'format' response
echo.
echo Insert USED diskette for drive A:
echo and press ENTER when ready . . .
pause >nul
debug<fforma.scr>nul
goto end
:bdrive
echo.
echo Insert USED diskette for drive B:
echo and press ENTER when ready . . .
pause >nul
debug<fformb.scr>nul
goto end
:nparam
REM help screen
echo.
echo The FFORM command will fast
format a previously
echo used floppy disk by nulling the
FATs, telling DOS
echo that the whole disk is vacant
echo.
echo No files are actually erased,
but the sectors
echo are marked to be overwritten
in a similar way
echo to DEL *.* (but much faster)
echo.
echo FFORM will not work on new disks,
giving a
echo "General Failure Error"

```

```

echo.
echo Type FFORM A: or FFORM B:
whichever you require
echo.
:end

```

To put the whole scheme into operation, copy FFORM.BAT, FFORMA.SCR, and FFORMB.SCR to a directory covered by your Path. Now, from any directory, you can just type Fform (drive) and the disk will be ready in the twinkling of an eye – just the thing when you can't wait to get your latest masterpiece safe on plastic! Seriously, I first wrote this program when I had a large number of disks to reformat, and this is the situation where it shines – it takes longer to change the disks than to fast format them.

Now if you're a real productivity whiz, you can conscript the services of the aforementioned kid to type Fform a: and Fform b: at the appropriate spots while you juggle disks in and out of both disk drives.

*J. Boetje
Brooweena Qld*

Filename recognition

Greetings fellow PC people. Here's another technical tip from the keyboard that never sleeps. How many times have you had trouble finding a file on the old hard disk, eh?

As you already know, files have two parts to their names, technically known as 'the bit on the left of the full stop' and 'the bit on the right of the full stop'. Let's call them TBOTLOTFS and TBOTROTFS like IBM and Microsoft do. (Actually, let's call them LT for left thingy and RT for right thingy.)

Now, because the main reason for losing files is that they have different names, this is my solution – name all related files with the same LT and use different RTs to differentiate between them. So, all dBase files would be named like DBASE.NAM (my name and address book), DBASE.PHN (my phone call log), and DBASE.BTP (bills to be paid) and so on. I'm sure you'll agree this is much more sensible. Not only that, but you end up with so few extra files like indexes and backups, as you only ever need the one such as DBASE.NDX or DBASE.BAK. A great way to save space. Likewise, my wordprocessor files are all called WORDPRSR.??? and my Lotus 1-2-3 are called ... yep, you guessed it –

LOTUS123.???, and so on. So, when I sort my directory, all my similar files are listed together. Yes, I know – brilliant.

*Vern Shrunkle
West Wobbalong*

IDE Drives

I am considering upgrading the hard disk in my 12MHz AT. While I know all about MFM, RLL, ESDI and SCSI, I am confused by these new drives on the market which are referred to as 'AT-bus' or similar. Are these like hard cards, which plug directly into the expansion bus of the computer?

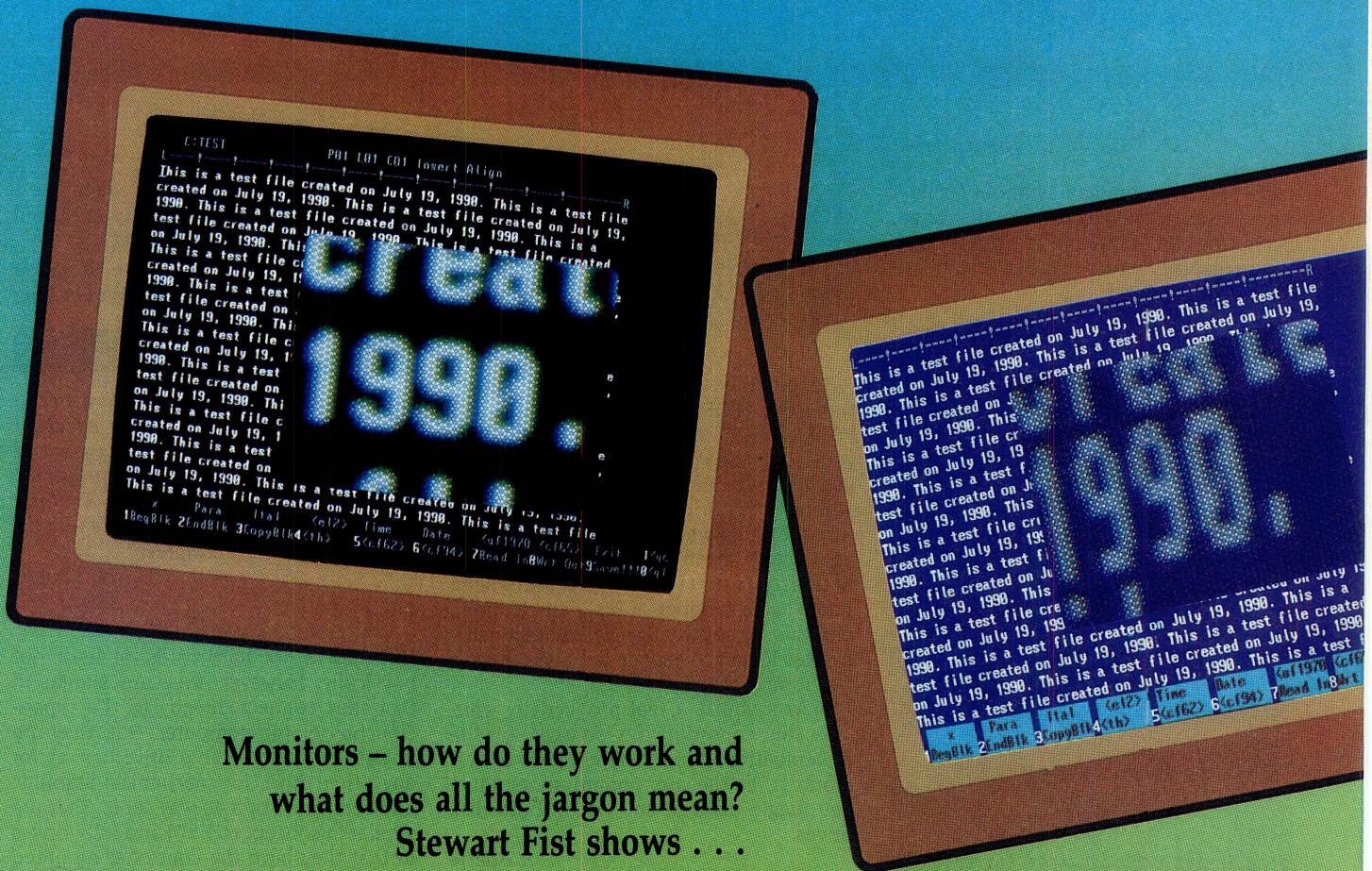
*N. Wright
Abbey WA*

No, they're not hard cards, at least not physically. However, they are similar in that they connect directly to the expansion bus of the computer. But, they are physically mounted in a drive bay, as for any other drive, for mechanical stability, and connected by a 40-way cable. They are similar in concept to ESDI and SCSI drives in that they have the controller mounted on the drive. While SCSI and ESDI drives only have part of the controller built into the drive (and thus still require a controller card), AT drives have the entire controller built into the drive, and for that reason are also commonly known as integrated drive electronics or IDE drives.

Many computers have an IDE connector on the motherboard, or an interface card can be supplied with the drive. The IDE interface is basically an extension of the relevant lines of the AT's I/O bus. This means that the drive doesn't have to conform to any of the existing drive-interface standards since the drive and controller are one unit.

If you want to use an IDE drive on a particular machine, check that the BIOS supports the IDE drives. If it is an old BIOS, it probably won't. Ask your dealer about an upgrade to a version which does support IDE drives, or has a user-definable drive selection (recent AMI and Phoenix BIOS' have this feature). This allows the specific parameters – number of cylinders, heads, and sectors, and the write-precompensation value – to be entered for drives which are not supported by any of the pre-defined selections.

User-definable drive types avoid the need for driver software, such as Disk Manager or SpeedStor. If you can't upgrade the BIOS, try getting one of these programs from the dealer whom you bought the drive from. □



Monitors – how do they work and
what does all the jargon mean?
Stewart Fist shows . . .

MONITORS IN FOCUS

Part 1

YOU WILL NOTICE, if you look through the literature, that there isn't much written on the technology of monitors. Sure, there will be plenty of reviews comparing video graphics adapters and some mention of the various computer graphic standards, but not much on the monitors them-

selves. I guess it's because most users, writers and editors tend to see monitors as some sort of a window -- you don't notice them so much as look through them. When you buy your PC, the store gives you an adapter and monitor with it, and that's that. But there's such a confusion over video standards with the IBM system that

even the video technicians tend to give up in disgust and concentrate only on a few types – or they swap over to

the Macintosh, where Apple had the sense to do everything right the first time.

There is no doubt that IBM monitor- and video-standards are complex, and understanding them involves all those things we like to forget after leaving school – things like mathematics. This level of understanding is often one for the 'too-hard' basket.

ankle-biter away from Dr Who so that the television set was free for computing, I bought a monitor.

In that time I came to appreciate the fact that 80 characters across the screen were a hell of a lot better than 40, and that a capital-letters-only display was not conducive to writing and wordprocessing. So I bought an Australian-made 80-column card and a very good green-screen Haga Denshi monitor which still functions perfectly today.

This raises the questions 'What creates the difference? Why are television sets so inferior? Why were monitors so expensive?' It's all to do with the quality of the electronics and the superior design of monitor circuits. Think of your television set simply as a mass-produced cheap

monitor with a tuner added. You don't notice this inferiority during your nightly television sessions because you are sitting well away from the screen, the images are constantly moving, and the images aren't of the type that require fine visual definition.

And, that's why we happily tolerate low-quality in a television set, but they don't apply to a monitor. However, these are not reasons why television sets don't make good monitors, and to look at this difference we've got to talk about bandwidth.

'Mention **bandwidth** and half the readers will drop out,' says the editor. But monitor bandwidth is a concept that must be understood if we are to read spec-sheets.

Television/monitor resolution

I AM GOING to use American NTSC standards for comparison in the discussion here, since most monitors and computers conformed originally to US standards, and I am also going to assume that you know the basics of how televisions work.

On any monitor or television set, the electron beam begins its scan at the 'home' position, which is the top left of the screen when you are facing it. It will scan across the screen (horizontally), then return to begin a new line again from the left-hand edge, but this time slightly lower. All televisions and monitors have both fast-acting horizontal drive circuits and slower-acting vertical drive circuits, and when the two act in concert, the screen is scanned from top left to bottom right in a series of lines.

But there is a such plethora of products out there, and screens are costly items, which, even more than keyboards and processors, define how well we can work on our computer. Optical strain is one of the main problems in computing, so you owe it to yourself to invest some time and effort in making the best-possible screen selection.

In this two part series we are going to have a deeper look at monitors, video graphics cards and the standards, and try to dig some of sense out of the morass. Get out your calculator – you'll need it.

I remember buying my first PC (an Apple II) and strenuously resisting the salesman's efforts to sell me a monitor. It seemed an unnecessary luxury at the time, especially at the premium price he was quoting. From memory, he wanted about twice the cost of a good B&W television set and I had a perfectly good television at home. After a week of eyestrain, nightly headaches and constant battles to get the





Computer displays still lack the 'real' feeling of television – the problem is not in resolution (both Mac and PC displays have a higher resolution than TV), but in the difference of available colors. To show a 'real' image takes upwards of 100,000 different colors, while in the PC world we are generally limited on-screen to 256 colors (albeit from a pallet of 16-plus million). The new families of graphics workstations – like Tektronix's XD88 pictured here – are combining imaging, graphic and video technologies to give life-like 'interactive visualisations' with 1.3 million colors on-screen at once and a resolution of 1280 x 1024 pixels.



The MultiSync 2A is NEC's entry-level multiscanning monitor – a technology the company pioneered over three years ago with the original MultiSync. The 14-inch 2A has both VGA (640 x 480) and Super-VGA (800 x 600), with a horizontal scan rate of 31.5KHz and an automatically selected vertical rate of 56, 60 and 70Hz. It's priced at \$1075; contact NEC Home Electronics, (02) 868 1811 for more information on the MultiSync range.

NTSC television has 525 of these lines (only about 480 are seen on the screen) which are repeated every 30th of a second – a total of 15,750 scan lines per second. In the specs, you'll find this expressed as a 'horizontal frequency of 15.75KHz' – which is a requirement of the standard, not an option of the set-maker.

But television sets scan in a rather odd way, and this is the first major difference between monitors and television sets.

An NTSC television set actually scans 262.5 horizontal lines (called a 'field') every 60th of a second. It lays down the odd-numbered lines first, then returns to the top-centre of the screen and begins again with the even-numbered lines. This is called '2-to-1 interlace' scanning and it helps preserve the continuity of fast-moving images when watching television.

By splitting the number of lines in half and repeating them at a 60Hz rate, you reduce the appearance of screen flicker while avoiding the need to use long-stick phosphor coatings on the inside of the tube. For television, you don't want the image to stick because any fast-moving object will then trail a ghost behind. Computer monitors don't face this same problem (although mouse interfaces have a cursor movement problem). Generally, computer monitors display relatively static images, so long-stick phosphors are an advantage. This is one reason why a monitor always looks less 'flickery' than a television set.

Because of this image retention in computer monitors, it also became possible to 'progressively' scan the image rather than 'interlace' it. Monitors still start scanning at the top left of the screen, but they now paint every line in sequence (not just the odds or the evens) until they reach the bottom, and they start again at the top every 60th (or so) of a second.

Progressive scanning is easier to control and provides better image resolution because there's no problem of 'interlacing' the odd-even lines accurately or timing them so that they don't subtly move against each other. So this technique improves the image quality and cuts the flicker, while doubling the rate at which information is painted on the screen.

This last point is directly related to 'communications' bandwidth. Double the information which needs to be trans-

mitted to the set/monitor and you double the bandwidth requirements, so if they'd used 60Hz progressive scanning in television sets, they would have had to halve the number of channels available because of radio-spectrum limitations. Monitors are connected by cable, so there's no such limitation.

Incidentally, interlace scanning has since reappeared in the computer world at the upper-end, for CAD and DTP applications. The Super VGA and 8514 standard monitors (with 1024 x 768 pixels) are interlace scanned because progressive scanning (at the same frequency) would double the already-very-high bandwidth requirements and push the technology to its limits. But generally, we have a progressive scan system with monitors.

Bandwidth

LET'S ASSUME we are trying to use an NTSC television set as a monitor. In NTSC, there are 15,750 (525 x 30) scan lines being drawn every second. If you calculate this, each line scan requires 63.4 microseconds from the time it begins its scan, until the time the next scan begins. If you subtract about 10 microseconds from that to allow time for the electron beam to retrace (flyback, also called the 'horizontal blanking interval') then you have an 'active scan period' of about 53.5 microseconds for each horizontal line.

You need to visualise what is happening during this 'active scan' period. As the raster (the generated dot on the phosphor) scans across the screen, the electron gun is being turned on and off by the video circuits to create 'pixels' of brightness and darkness – these are the dots that are 'painting' the characters.

The question is 'How fast can these circuits handle the repetitive switching from full brightness to full black?' No electronic circuit can handle these changes absolutely and instantly, there's always some lag, and the effect of that lag is expressed in monitor 'bandwidth'. This is quite distinct from the 'communications' bandwidth, but it must be equal to, or greater, to handle all the information being fed to it.

If the video-circuits were to be able to 'paint' 80 characters across the screen, and since each character-box (in IBM's MDA monochrome standard) is made up of nine horizontal dots (eight for the character and one for the space between – see Figure 1), then the raster must be capable of switching on and off at a rate

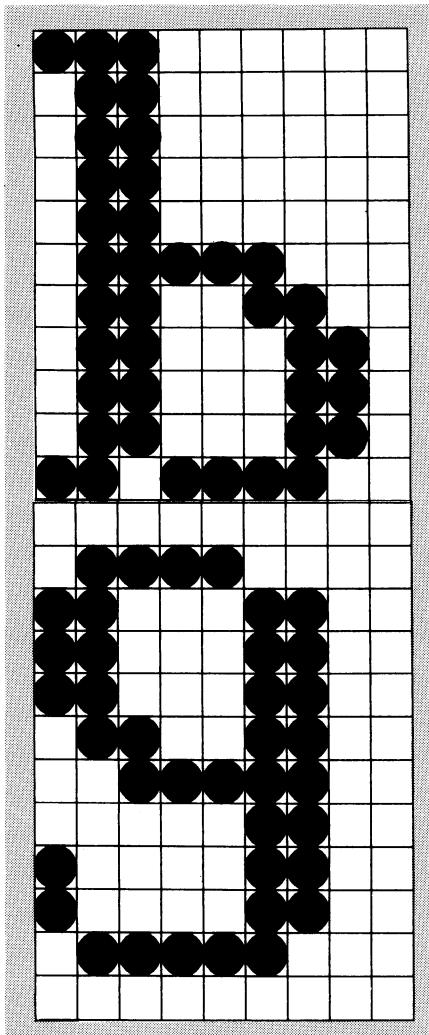


Table 1. In IBM's MDA monochrome standard, each character box is made up of nine horizontal dots – eight for the character and one for the space between. CGA uses a 7 x 7 dot character matrix within an 8 x 8 character box.

of at least 720 (9 x 80) times in each 53.5 microseconds period.

If you care to calculate this you will see that the circuits and the scanning beam must be able to cycle from black to white at a rate of about 11.34 million times a second – which gives us a minimum horizontal bandwidth requirement of 12MHz. If you have anything less than this, and will not have 80 clean characters (of this 9 x 16 quality) across your standard television screen.

In fact, the average is only 5MHz for a television set. They got over this 5MHz

problem in the old home computer/television set combination by only using 40 characters, capitals only, and often only 6 x 8 character matrices.

By contrast, your monitor with progressive scanning at a 50Hz or 60Hz rate and less scan-lines than NTSC needs to have a bandwidth of 18MHz. You didn't realise your monitor was so much better than your television, did you?

So the required minimum bandwidth for a monitor is calculated by the number of on-off changes needed in each scan line, multiplied by the number of lines needed for a full-screen scan cycle (including those during the vertical blanking period), multiplied by the number of full-screen scans repeated each second. In these areas, theory and practice match perfectly. Vertically (continuing with MDA's 8 x 16 character box) we can calculate how many readable lines of text we can fit onto the NTSC screen also.

There are 525 lines overall, but some of these are taken up by the vertical blanking interval (the flyback to the top of the screen), and some other lines are hidden behind the bezel (overscan), so at best we only have about 480 lines visible on the screen, and you wouldn't use a few at the top and bottom in case the set was slightly misaligned and the image was shifted vertically.

So, let's say we have 460 usable lines. If we now divide this figure by the character's 16 dot matrix-height, we get a maximum of 28 lines of text to a screen. With monitors this is usually kept down at the 25 mark.

You can easily tell if a monitor has an inadequate bandwidth for 80 characters and 25 lines because the lack of definition of the text and blurred gaps between text characters will show up more at the farthest extremities of the screen if the monitor is a border-line case. If the monitor hasn't been well made or aligned, you'll also find that horizontal text lines aren't straight.

The simplest way to check all this in the shop, is to hold down the Caps 'M' key in a wordprocessing program and fill the screen with this repeated character. Examine the screen closely, comparing the centre with the corners and check the straightness of the lines. This should be the first test you do when buying any monitor – and do it on the screen you plan to buy, not on the store's demo model which may have been 'tweaked' up specially.

Character generation

TEXT HANDLING by IBM's monochrome (MDA) standard set a pattern which was later copied by Hercules (HGC/MGA) and to a degree by IBM's first color monitor standard, CGA. With these systems, the text generated by any program is transferred to video RAM where it is held as a series of double-bytes, 16-bits in length. The first 8 bits represent the ASCII character itself, and the second eight provide the attributes. Attributes are simply formatting information related to one character – in MDA and HGC/MGA these tell whether the character is to be displayed in low or high intensity, constant or flashing, normal or reverse video, underlined, and so on.

These 2000 ASCII bytes and the 8 bits of the attributes are simply placed into a 4K section of video memory (above the 640K Dos RAM limit). So the screen only exists in this ASCII plus Attribute form – there is no bit-mapped screen 'image' as such. To display the text, the PC takes it, a character at a time, and uses its ASCII number as an address-pointer to access a particular dot-matrix pattern in the ROM character generator.

The use of ASCII numbers as 'addresses' provides the computer with a simple one-step translation process from a 2-byte character to dot patterns on the screen. The video circuits actually scan the dot patterns in ROM, one scan at a time, and since the matrix for a character-box in MDA is 16 lines high, it will take 16 distinct ROM scan cycles to draw a full line of text on the screen.

The important point here is that there is no intermediate bit-mapped stage. Yet, this system is able to draw complete 9×16 lines of characters direct, and set their 'attributes' simultaneously by processing the output on the fly. You must be able to do this very quickly if your screen is to be able to scroll – especially with the old 4.77MHz processors.

This complex job of updating the screen is the responsibility of a Motorola 6845 CRT controller chip which also provides the control and timing signals. When the CPU wishes to update the ASCII information in video RAM, it simply takes control of the address lines, temporarily suspends the 6845's activity, and replaces both the byte and its attribute.

If you use this MDA text mode with later color displays, you can actually see the pause as a series of black glitch lines on the screen when the CPU is in operation, although IBM's monochrome adapter

used a fast static RAM to overcome this problem.

Thus, the MDA text-handling process is from main memory via the CPU to the video refresh RAM (where it is stored in ASCII) and from here, under 6845 control directly to the screen. The process is analogous to 'interpreted' programs, as distinct from 'compiled' programs. Every time a screen refresh takes place, the 6845 chip performs a new series of translations and transfers that output to the screen as a sequence of lines of dots.

The technique is known as 'memory-mapped video', as distinct from the 'bit-

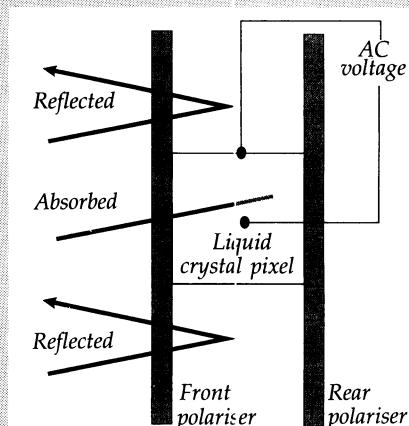
Next month we'll be looking at the change in direction that IBM made after CGA, which resulted in the EGA, VGA and VGA standards, and the variations on VGA – Enhanced and Super VGA.

mapped video' used for graphics (and text displayed as graphics). You can see that the 'interpreted' approach is very sparing in its use of RAM and CPU time, and it provides a very fast way to update the screen with slow processors – only the absolute minimum needs to be done to get the characters up onto the screen.

However, you can't change the shape of the characters without changing the ROM character generator (although some ROMs hold two fonts), which is why the IBM PC became stuck in the rut of basic wordprocessing and number crunching, while the Macintosh (which uses an entirely graphics approach) was able to provide multiple text styles (fonts), WYSIWYG screen appearance, and eventually, desktop publishing layouts with graphics included with the text. IBM's early approaches to screen handling were cheap, easy and fast, but extremely limited.

DESKTOP MONITORS are reaching for the megapixel and color limits of the human eye, but as any laptop user knows, display technology in their area still has a long way to go. Currently, laptop displays fall into three broad categories: LCDs (liquid crystal displays), gas plasma and EL (electroluminescent).

LCDs would be the most widely used and offer a number of advantages over the other two types. These include lightweight, low power consumption and good resolution; an advantage in common with the other two is the linearity of the display – since they are all flat panels, there is no distortion at the edge of the screen.



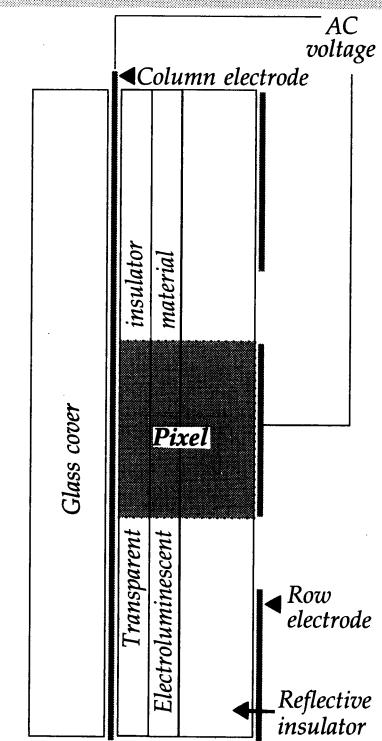
LCDs use a matrix of pixel crystals sandwiched between two polarisers (only one pixel is shown here). In the 'normal' state the crystals are twisted and modify the polarisation of the light so that most of it is reflected back through the front of the screen – the pixel appears gray; when a DC voltage is applied to the pixel (each one is addressed individually), the crystals untwist and the polarisation is modified so that most of the light is absorbed by the rear polariser – the pixel appears black. (This type of crystal with two different polarising states is known as 'nematic'.)

In theory, the LCD described above should give a highly readable display, but in practice incident light reflected back through the layers of the display greatly reduce contrast, making them difficult to read in many situations; and, since they depend on incident light as a source, they don't work in the dark. The limitations here have been mostly overcome by using a light source behind the panel.

Laptop displays

But there is a trade-off: a backlight display uses much more power.

Gas plasma displays use even more power, but offer the advantage of a gray scale, of sorts. The principle behind them is that the gas held in the pixel matrix (usually neon or a neon/argon mixture) is excited by a voltage across it; an orange/red light is emitted (there are both AC and DC versions). Because the voltage necessary to cause excitation is on the order of 200V, converter circuitry has to be included. This adds weight, cost and power consumption.

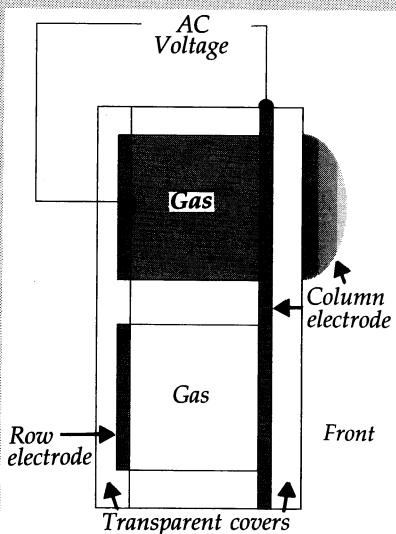


Gas plasma displays have a pixel matrix sandwiched between transparent covers and two sets of electrodes (one running at right angles to the illustration, the other parallel). Each gas-filled pixel location has a unique address (electrode row and column number) and can be excited separately. The DC version is less expensive to manufacture, but has a constant background glow because of the continuous current flow; the AC version doesn't have that problem, of course, but is more expensive to build.

Currently, gas plasmas are plagued by a short life span and further disadvantages by the lack of color capabilities, but

recent announcements from several manufacturers indicate there might be a future for the technology: we are hearing promises of relatively low-cost 20-inch panels with resolutions up to 256,000 pixels.

EL displays differ from the above two in that these are true solid state devices – this gives them a ruggedness not found in the others. Other advantages are that they are more compact and light-weight and have a broader viewing angle and more contrast than either gas plasmas or LCDs. ELs use much less power than gas plasmas, but more than LCDs.



EL displays use a zinc sulphide plus manganese phosphor as the electroluminescent material. As with gas plasma displays, each pixel has a unique address – when an AC current is passed through the pixel, at around 200V, the phosphor emits a bright yellow light (other phosphors give different colored emissions). Gray scales can be achieved using a controller chip.

EL displays are still quite expensive, but they have found an enthusiastic reception in military and industrial applications because of their light-weight, long life and ruggedness. In time though, this is the technology that will probably become the most widely used. At the moment, no color EL displays have reached the manufacturing stage – the problem has been in finding a good blue phosphor – but several companies are planning color releases in the near future.

– Jake Kennedy

Color

THE BANDWIDTH and resolution figures that we calculated above for MDA and NTSC monitors also apply to color monitors. Color tubes have three electron guns (one each for red, green and blue) but all work together so this doesn't alter the monitor's bandwidth requirements. If you want 24 lines of text each with 80 characters, and you are using a 9 x 16 character matrix, then you'll need a monitor with at least 18MHz of monitor bandwidth, and don't let any salesman convince you differently.

In the early days of color graphics, this high-bandwidth requirement made color monitors very expensive because it represented a dramatic increase in quality over the existing color television sets of the day (and it still does). Which brings us to the notorious CGA (Color Graphics Adapter) standard which IBM introduced back in the early PC days.

In order to cut down on bandwidth, and thereby reduce the cost of color monitors, IBM decided to create text on the CGA screen using a 7 x 7 dot character matrix within an 8 x 8 character box, rather than the previous monochrome 16 x 9 box size. This brings the horizontal requirements down only by 8/9ths.

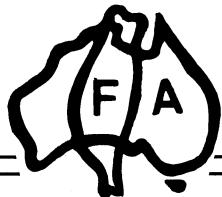
However, vertically it makes a big difference. If you can reduce the number of scans needed to produce 25 character lines on the screen from $25 \times 16 = 400$ to $25 \times 8 = 200$ by reducing the character height, then theoretically you need only about half the old monochrome bandwidth.

As a result, CGA monitors have a bandwidth of about 10MHz even though they display the same amount of text as MDAs, but the character shapes are abominable. You quickly get a headache trying to decipher words on a screen like this, especially as the screen blinks when it scrolls.

Text and graphics

CGA WAS IBM's first graphic and text monitor, and also its first PC color monitor, so you've got to look upon this standard as a rather botched attempt when the cost-quality trade-off with color monitors was in its early stages. Quality color screens cost an arm and a leg at the time, so CGA was a very much a compromise.

In fact, IBM even made an allowance for the fact that many users would want to feed the CGA output to NTSC television sets, so they provided a 40 x 25 text line mode and an 160 x 100 pixel graphics



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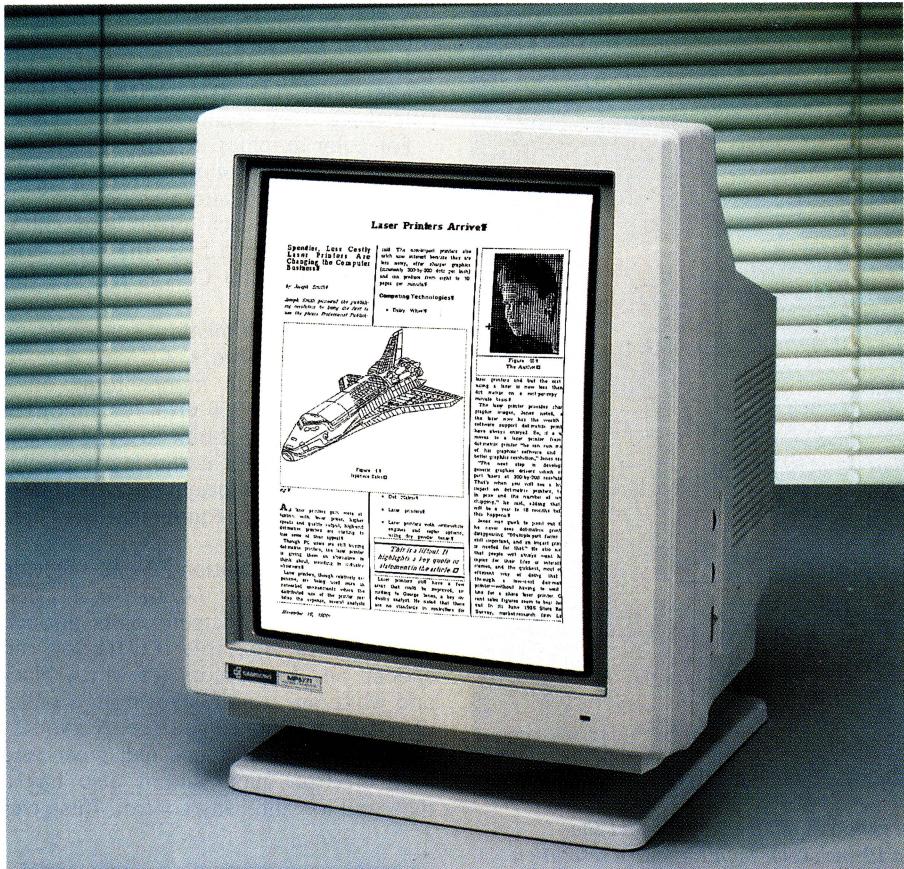
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Samsung's MP5771 15-inch page display is a flat, white phosphor screen with a resolution of 1006 dots by 1048 lines – that translates into 82 characters by 66 lines. It's available in both Mac and PC versions and is priced at \$729 for the monitor and \$825 for the controller board; for more information contact Samsung Electronics (02) 638 5200; fax (02) 684 4084.

mode that many experts don't even know is there. This really was IBMs last-ditch effort at selling the PC as a 'home computer' rather than a business machine.

The handling of text is pretty much the same as with MDA, except that they changed the use of the eight attribute bits attached to each character. Where MDA used three bits for foreground (text) intensity, and another three for background and underlining, the CGA standard appropriated these six for foreground and background color-control in the text mode (the graphic mode works quite differently) – that's why you can't underline text in CGA.

The full text of a CGA screen is still $80 \times 25 = 200$ characters which can be stored in 4K of video RAM as before. But since the CGA adapter card has 16K of RAM on-board to handle its graphics mode, you can actually store four differ-

ent pages of text (and allocate a text and background color to each), then by quick-switching the output between these pages, it can appear as if the screen is divided into four different colored areas. Mind you, the pink and cyan areas are pretty bilious when combined with red, green and blue.

There were secondary benefits to this 8×8 character box both in saving the cost of memory chips and in the fact that these characters can be produced with very simple logic, since 8-bits is a standard byte size. If everything is kept in eights, the computer memory can be addressed and allocated easily.

However, graphics requires quite different treatment. The full extent of video memory is treated in bits, rather than bytes. And, these bits can be single, or grouped together in twos or fours or whatever, depending on the mode you

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are using.

For text, the CGA screen was $8 \times 80 = 640$ pixels wide, and $8 \times 25 = 200$ pixels deep, which allows us to calculate that there are a total of 128,000 one-dot pixels available for graphics. This is also the total number of video memory locations (not necessarily bits) you need if you are going to create graphics at the highest possible resolution.

If we are talking color, each pixel-location needs to hold color-control information. A simple monochrome graphic can be stored in one bit per pixel, but color needs two or more, and the more you can provide, the more you can control the color. If the monochrome images are to have different levels of grey, it too requires more than one bit per pixel – and, in fact, the more sophisticated monochrome adapters will treat color pixel-bits as grey-scale control.

We no longer need the 8-bits for each

character, or the 8-bits for attributes, but there is now $9 \times 16 = 144$ times more pixels on the screen than text characters in high resolution graphics. Hence we need more video memory.

For text, the amount of video memory necessary can be calculated by number of lines of text on screen, multiplied by the number of characters to a line, multiplied by the horizontal, times the vertical dot-matrix size of the character box. This gives us the number of bits. So divide by eight for bytes, then multiply by two because of the ASCII plus Attribute combination. You'll find that this works out to 4K for the MDA standard.

For graphics, video memory is calculated by the horizontal times the vertical pixel count, multiplied by the pixel depth (how many bits are needed to store the color or grey information). You'll find that this works out to be 16K for CGA. The 4K text area is set at the

low end of the reserved memory space, with the 16K graphics area set higher. Later standards like EGA overlap the whole range, but CGA, MDA and Hercules keep them separate.

For color graphics in CGA at its highest 640×200 resolution level (128,000 pixels), the system allocates only one bit of memory for each pixel. And, since there are 8-bits to a byte, the total storage requirement for CGA is the full 16K of video RAM.

The same video memory space can be allocated in two ways. CGA is able to display graphics in monochrome on a screen with 640×200 pixel resolution, or four colors (using 2-bits to light a double-dot as a pixel) at the lower resolution of 320×200 pixels. In either case, the video memory requirement remained the same at 16K.

These low-resolution 2-bits provide four different states (00, 01, 10, 11) and by pre-setting the screen colors through a Color Look Up Table (CLUT) you can choose any four colors (of which black and white are usually two) from a pallet of 16 colors. How do you get 16 colors?

Well, the monitor has red, green and blue electron guns, and it also has a high and low intensity control. This gives

Compatibility

BEFORE SOFTWARE can use any of these different video standards your hardware and software must provide the correct video screen drivers for the standard required. It must also have an adapter card which handles the standard (these days, many are now multi-standard), and you'll also require enough video memory for the standard in the mode being used (which is usually not a problem with MDA, CGA or Hercules).

A monitor which accepts the correct electrical signals from the adapter (either TTL-digital for MDA, CGA, Hercules and EGA, but analog for VGA and VGA) is required. Your monitor needs to have enough bandwidth to handle the required data rate (from about 16MHz up – although less is needed for CGA only). The monitor should also be capable of providing the required screen refresh rate (50Hz for MDA and Hercules, 60Hz for CGA and EGA, and 70Hz for VGA).

Cloned VGA adapters can either be BIOS register compatible, or hardware register compatible, however, and the latter is better.

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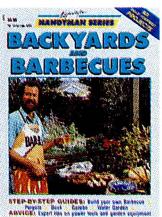
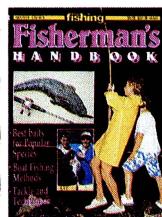
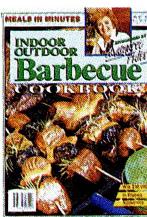
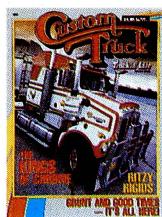
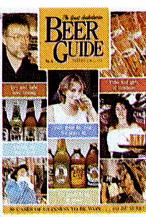
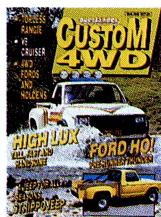
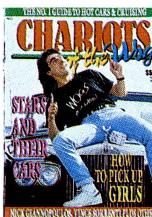
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Samsung's CEA4551 is a 14-inch dual-mode monitor – CGA offers 16 colors with a resolution of 640 x 200 and EGA, 640 x 350 with 64 colors. It's priced at \$649; contact Samsung Electronics for more information: (02) 638 5200; fax (02) 684 4084.

16 possible screen 'color' states (including on and off). How this is applied to the monitor depends on the presetting of the CLUT – it can provide any four from the possible 16.

Hercules

CGA WAS THE first monitor/graphics standard to provide graphics for the IBM PC, but it wasn't the only one. The Hercules Graphics Card (or MGA for Monochrome Graphics Adapter) was a 'snuck-in' graphics monitor standard for IBMs and compatibles which gained wide acceptance because IBM's MDA was text only, and its CGA standard was abysmal with text.

HGC was very fast for wordprocessing and the graphics were good, so it soon became a de facto standard. There's a lot of software written for Hercules, which is one reason to look at cloned adapters rather than IBM's proprietary ones, because IBM refuses to recognise that Hercules exists.

Hercules has both a text and graphics

mode. The graphics display is 720 x 348 pixels although only in monochrome. It uses the old MDA 16 x 9 character box for text, but despite the fact that the 4K or text video RAM is separate from the 16K of graphic RAM in the Dos system space, you can't have both text and graphics on screen at the same time.

Hercules products (as distinct from their video standards) departed from the IBM standards in another way also. Their card and monitor combination shifted some of the video control circuits out of the monitor and back onto the adapter. So, if you switch off a PC when it is driving a Hercules monitor, the screen goes blank – there are no drivers to keep the monitor scanning the screen. You can burn a Hercules screen in this way, so always switch these monitors off before the PC.

This was a bit of a mistake, but fortunately the cloners of the Hercules graphics standard didn't attempt to copy them, so when a video adapter is advertised as being Hercules-compatible, it

only means 'at the software level' – which is all you want. It means that the adapter can handle the Hercules software drivers.

Hercules also uses a different way of handling screen graphics to CGA, so it is not CGA-compatible at this level. Quite a few PC software packages won't drive a Hercules board in its graphics mode – you need the Hercules drivers and they aren't always provided, however, text will usually run perfectly because the text-handling process in MDA, CGA and HGC is virtually identical.

Later, Hercules release the HGC Plus which includes a RAMfont mode. This card runs MDA text (using a character generator) and the original HGC graphics, but it adds an adaptable technique of handling text by including software-generated fonts in the graphics mode.

You have always been able to use any graphics mode to display text (treating the characters as simple dot-groups) but this is always a very slow approach. When you change or add a character, the computer needs to define each pixel, whereas in text-mode it simply dumps the ASCII character into video RAM.

RAMfont was a way to get around this problem. You can have up to 3000 characters (different fonts, styles, sizes, and so on – or ideograms, symbols) held in an extra area of video RAM, and this can be used by HGC Plus in the old ROM way. Characters of different fonts can be read to the screen by the controller at high-speed, and this makes the graphics mode usable for text-intensive



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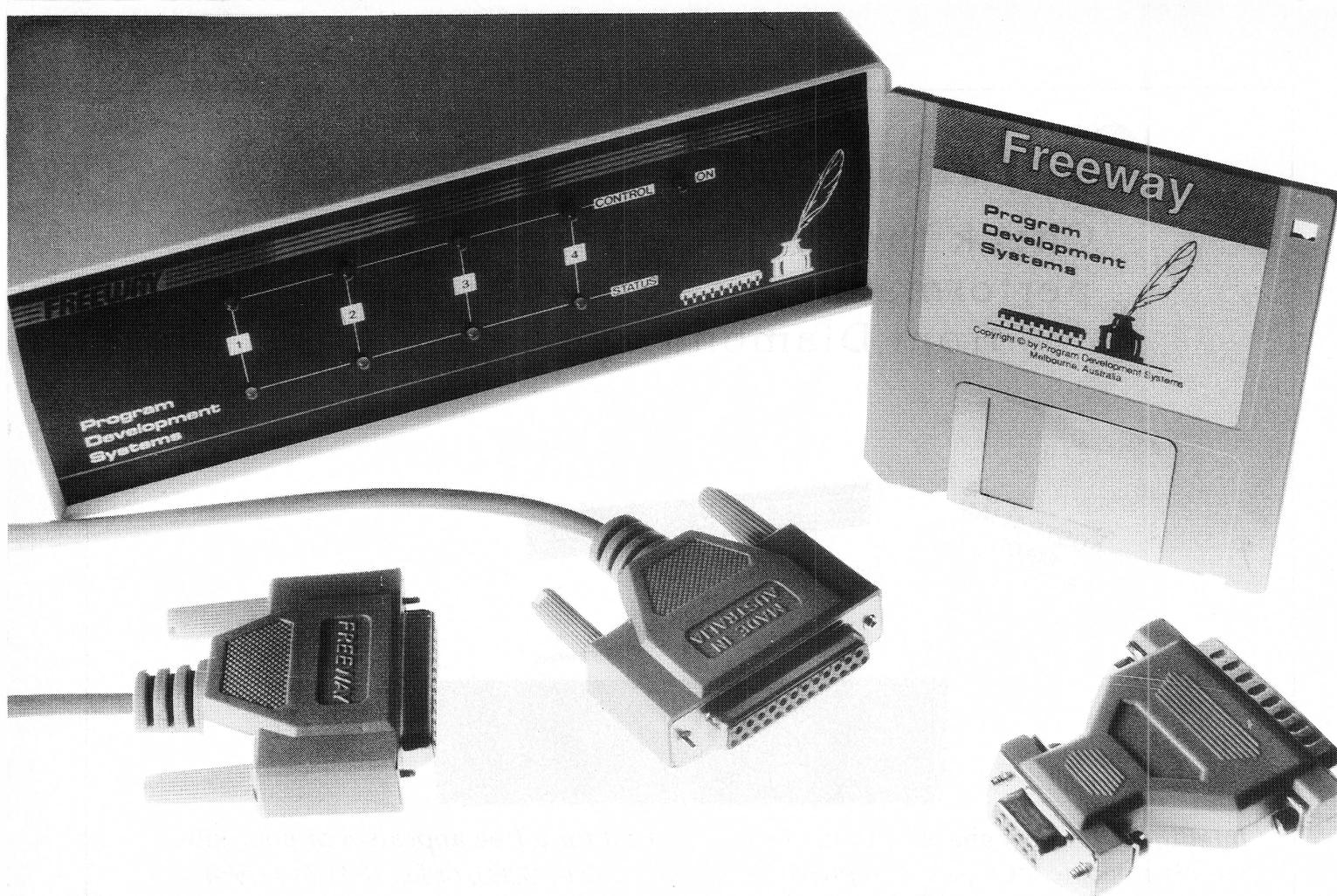
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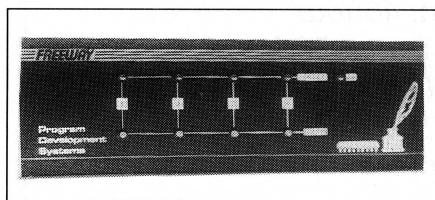
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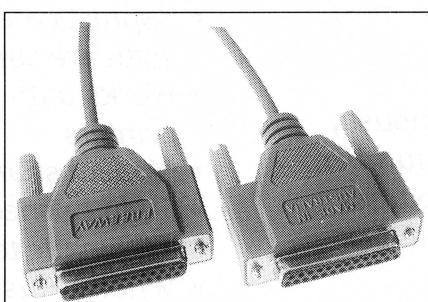
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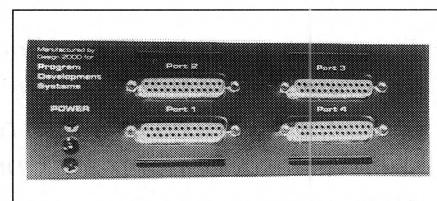
PC magazine (UK ed. Pg 64 June '89) said "...Freeway is the first file-transfer program with multitasking facilities. Its also the only program... which uses pop-up windows... Freeway lets you share a printer with a remote machine simply by popping up the Freeway window and selecting the printer option".



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applications. This was the PC's first step in the direction of WYSIWYG and true desktop publishing.

Hercules Plus provided a whole range of font styles and script types on disk (some down to an 8 x 8 matrix, which provided many more characters across the screen). You would load the font you wanted into RAM and away you went – of course, you needed to add a special driver to your software, but these were provided for the main applications. Word 3.0, for instance, could display in a 90 character by 40 line format, even if it was a bit hard to read.

Video memory

BUT THE QUESTION remains as to why these limitations were placed on these early video standards in the first place? It all seems rather short-sighted now, and the IBM PC range still suffers the legacy of these old decisions.

The problem was in providing video memory, which was costly in those days. If you wanted to handle the text (9 x 16) resolution of MDA using a total-graphics

Dot-pitch

MONOCHROME MONITORS don't use a shadow mask-screen, so there is no dot-pitch in their specifications. Color monitors require a shadow mask, and spacing of the holes in this mask (the dot-pitch) determines the maximum resolution that the monitor can handle. However, a fine dot-pitch does not guarantee better resolution – if the bandwidth is not high enough, the spacing of the shadow-mask holes won't make any difference.

For CGA, for instance, a 0.38mm dot-pitch is adequate on a standard screen. But for higher resolution monitors using later standards, then a pitch of 0.26mm or finer is required.

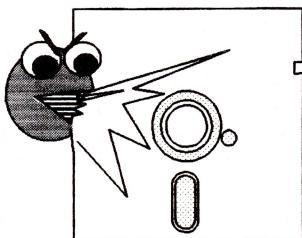
Also, be aware that the dot-pitch should be proportional to the screen width. The larger the screen, the greater the dot-pitch can be for the same 'resolution' of the image (assuming the same number of pixels are provided across the screen width). So there are many variations.

approach (which is what the Macintosh did) then you needed at least nine times the video memory with bit-mapping (144 bits per character instead of 16, and then you were without attributes like blinking).

However, the possibilities of graphics were foreseen when MS-Dos was being written, which is why Dos requires 1Mb of RAM to provide you with a usable 640K of work space. The area of memory locations above 640K (but below 1 Mb) is reserved for the system, of which the major user in later machines is this bit-mapped video memory. However, to make the early machines cheap, only 4Kb in this reserved area was initially needed for the monochrome MDA text-only mode – and from that point on, they were caught in the rut of having to provide backward compatibility with the older standard.

Next month we'll be looking at the change in direction that IBM made after CGA, which resulted in the EGA, VGA and Super VGA standards, and the variations on VGA – Enhanced and Super VGA. □

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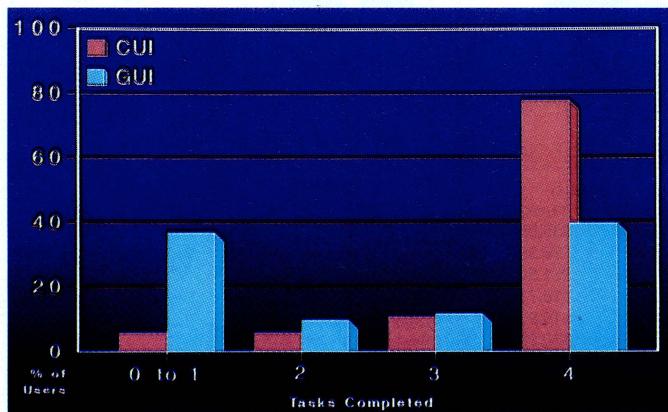


Figure 1. Research on office workers sponsored by Microsoft and Zenith in the US, showed that when using two different applications, on average 37 per cent of CUI (character-based interface) users and 6 per cent of GUI (graphical-based interface) users completed only a single task; 78 per cent of GUI users were able to complete all four tasks, but only 40 per cent of CUI users were able to do so.

more of the tasks a user attempted. Each exercise was divided into discrete, increasingly complex tasks, and each task was credited only if the user completed it correctly; this number was divided by the number of tasks attempted.

The GUI user's ability to work better was strongly supported by the research findings, and provided the clearest measure of GUI's advantages over CUI: in the mixed exercise, for example, GUI users completed 90 per cent of their work correctly, versus 68 per cent for CUI users – see Figure 2.

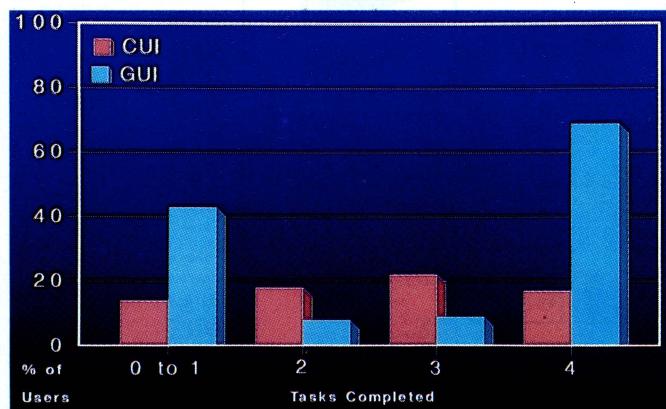


Figure 2. The GUI user's ability to work better was strongly supported by the research findings: in the multiple application exercise GUI users completed 90 per cent of their work correctly, versus 68 per cent for CUI users; 43 per cent of CUI users and 14 per cent of GUI users correctly completed a single task, while 69 per cent of GUI users and 17 per cent of CUI users completed all tasks correctly.

Higher productivity: The benefits of work faster and work better can be combined by measuring the user's useful output per work-

hour. This productivity benefit of GUI is the ratio of the useful output on GUI to the useful output on CUI and provides a measure of the real-world improvements possible by switching to GUI systems – see Table 1.

	New Users	Experienced Users	
		All Exercises	Mixed Exercises
GUI	4.3	45.8	3.2
CUI	2.9	29.0	1.8
GUI Benefit	+48%	+58%	+78%

Table 1. The productivity benefit of GUI is the increased useful output between CUI users and GUI users. Other things being equal, GUI users will attempt more tasks, do more of the work correctly and create less need for re-work.

An additional benefit, not measured but implied, is the avoidance of the cost of incorrect work. As current philosophies of quality management make clear, the cost of wrong work disrupting later processes far exceeds the cost of re-working the mistakes.

Lower frustration: To measure levels of frustration among novices learning GUI and CUI applications, TBS surveyed users about their expectations before the testing program, and surveyed them during and after the program for both current and retrospective reactions. The average level of frustration – provided by the users on a scale from 'Not at all frustrated' (0) to 'Extremely frustrated' (10) was computed for GUI and CUI users separately.

'What you do is what you see is what you get. There is nothing hidden.'

Novice GUI users reported much less frustration than CUI users both at the start and at the end of the tests – see Figure 3. (The research did not establish why CUI users' expected frustration was higher than GUI users'). By the end of the tests, however, GUI users were less frustrated than they had expected to be, whereas CUI users as a group were more frustrated than they had expected to be.

Lower fatigue: To measure relative levels of fatigue, TBS surveyed users about their energy levels before, during and after the tests. The average level of energy – as reported by users on a scale from 'I feel extremely energetic' (0) to 'I feel completely drained of my energy' (10) – was computed for GUI and CUI users separately.

Experienced GUI and CUI users began the test at the same ap-

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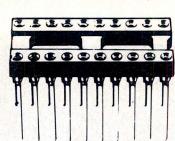
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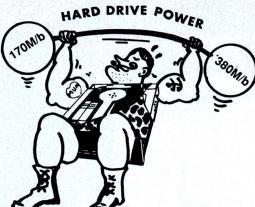
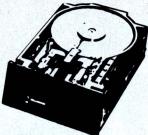
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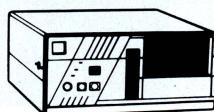
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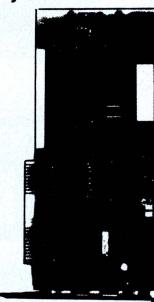
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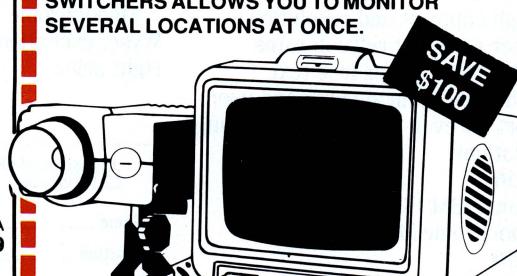
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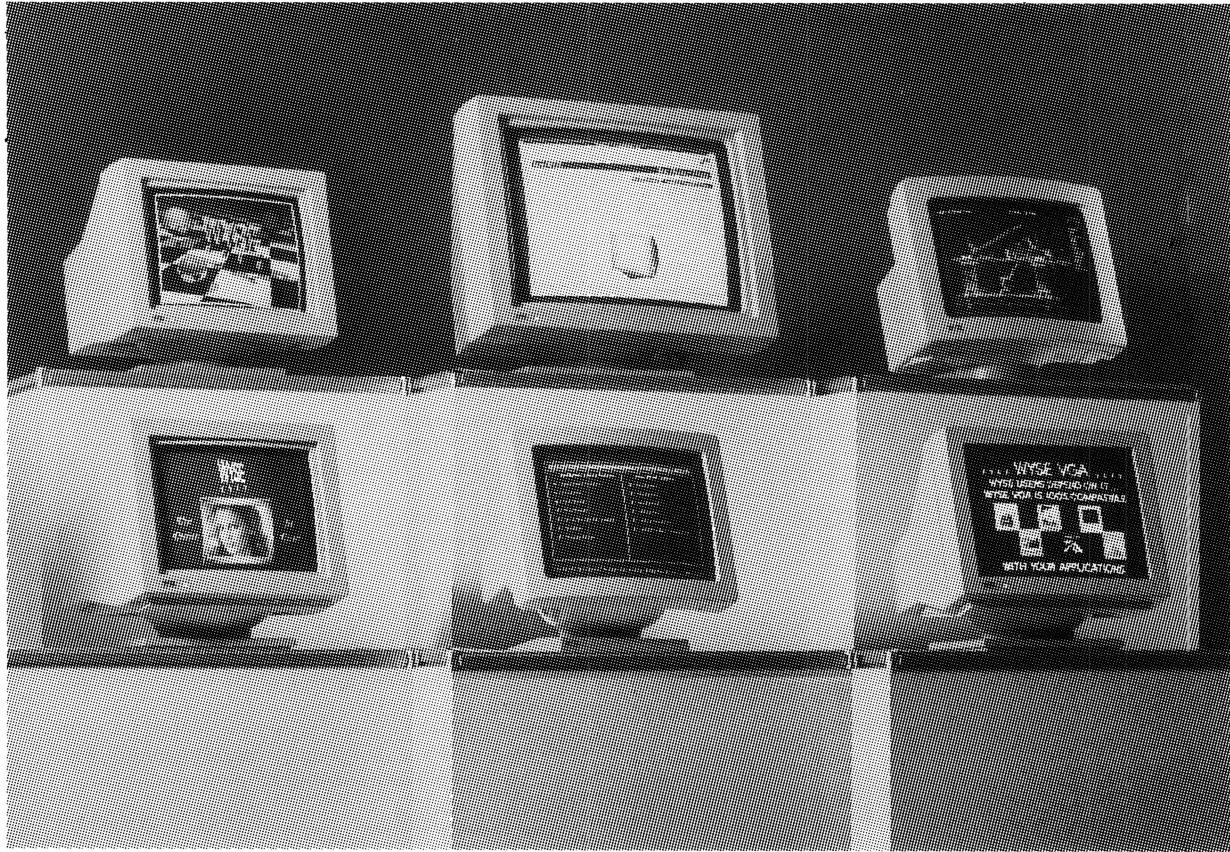
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proximate level of fatigue. The GUI users, however, became relatively less fatigued over time, even though they were completing more tasks than CUI users – see Figure 3.

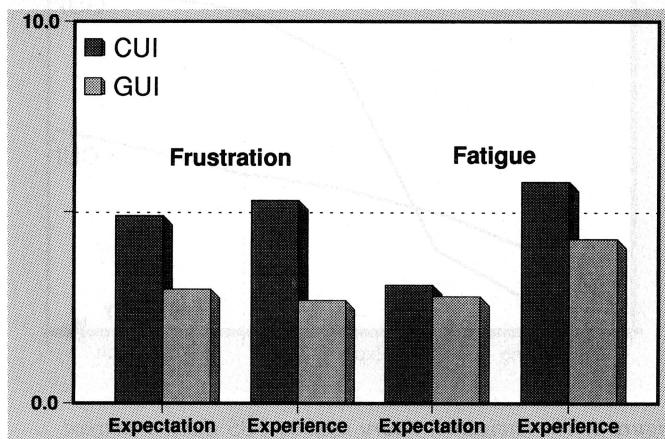


Figure 3. Novice users of CUI and GUI were surveyed about their expected frustration before the testing program and again after, using a scale from 'Not at all frustrated' (0) to 'Extremely frustrated' (10). By the end of the tests GUI users were less frustrated than they had expected to be, whereas CUI users as a group were more frustrated than they had expected to be. Relative levels of fatigue were determined by asking experienced users about their energy levels before, during and after the tests. The average level of energy was measured on a scale from 'I feel extremely energetic' (0) to 'I feel completely drained of my energy' (10). The GUI users became relatively less fatigued over time, even though they were completing more tasks than CUI users.

Better ability to self-teach and explore: The easier software is to learn, the more likely a user is to explore an application's advanced features. To measure the likelihood that a user would attempt to explore an application, TBS surveyed participants before the tests about their expectations and, before and after the tests about their confidence in teaching themselves more of an application. The average level of confidence was reported by users on a 10-point scale from 'Extremely difficult to teach self more' (10) to 'Extremely easy to teach self more' (0). GUI novices felt greater confidence in their abilities both before the tests began and afterward. TBS inferred that novices using GUI were better able to self-teach and explore than CUI novices based on their expressions of confidence and willingness to attempt new tasks.

There was no difference in the confidence levels of the experienced GUI and CUI users. Interestingly, despite the comparable levels of confidence, experienced GUI users reported little need for software vendors' documentation or aids, but CUI users felt their performance would have greatly improved if such aids had been available.

Learn more capabilities: TBS measured novice users' attempts to solve a series of increasingly difficult exercises in order to gauge their ability to learn more of an application's capabilities and features. Each exercise was divided into discrete tasks, and each task was accepted if the user had attempted it, whether or not he had completed it.

The GUI novice's greater willingness to attempt exercises, which suggests the ability to learn more capabilities, was sup-

ported by the quantitative study findings: GUI users attempted 6.5 exercises and CUI users, 5.3.

Learning process: When asked how long it would take to feel comfortable using the applications to accomplish their current work, GUI participants said it would take no longer than a few weeks. CUI participants, on the other hand, said one to six months would be necessary to feel comfortable.

GUI novices appreciated the consistent menu structure and revealing screens of this environment. One participant said, 'What you do is what you see is what you get. There is nothing hidden.' The graphical environment was also praised for its aid to exploration: 'Once you know the four basic things that come up every time you turn the computer on, you just sort of feel around... I'd forget something, and I'd say, 'Oh, wait, let's try that'. Then I'd remember.'

CUI novices said that they would have purchased application software based on reputation alone but had not appreciated how little help was available to fully utilise the application's features. One CUI participant, who was impressed by the non-graphical spreadsheet's capabilities but had trouble mastering it said, 'I assume there is a trade-off here between simplicity and power'. GUI participants on the other hand, did not indicate that simplicity and power seemed to be mutually exclusive.

The navigation hypothesis helps to explain the findings regarding frustration and fatigue and learning; it also explains why the GUI users performed particularly well on the mixed application tasks.

CUI participants in most tests did not find the teaming experiences to be easy. One participant said, 'You just keep hitting keys. It won't tell you what you're doing wrong, just that you're wrong'.

Corporate benefits

HOW DO THE individual benefits identified in the experiments translate into benefits for the employers who make the investments in hardware, software and training? TBS has suggested that the individual benefits described in this report can result in the corporate benefits of higher output per work-hour, higher output per employee and greater return on information technology investment. These relationships represent TBS's judgment; no research was done in corporate settings. In most cases, however, the inferences seem straightforward – for example, if individuals work faster, better and with less fatigue, corporations should be able to realise higher productivity from them.

Experience suggests that as with any investment in information technology, corporations will not realise these benefits automatically. For example, those who are installing new technology in manufacturing settings are warned not to 'automate a mess' and the same caution applies in office environments: the introduction and application of information technology must be aggressively and insightfully managed to achieve its potential benefits. With

that caveat, however, TBS believes that the research findings are clear evidence supporting the potential – not the guarantee – of GUI to create value for the corporation through:

- Greater labour productivity through faster and more accurate work.
- Reduced training, support and distraction costs because of greater user self sufficiency.

The navigation hypothesis . . . also explains why the GUI users performed particularly well on the mixed application tasks.

- Improved work-quality through more frequent and extensive use of software applications and lower fatigue.
- Reduced costs of re-work due to incorrect performance of computer-based work.

Also, although the broader benefits of lower frustration and fatigue are more difficult for corporations to quantify, they could provide human resource management advantages for organisations of intensive computer users. □

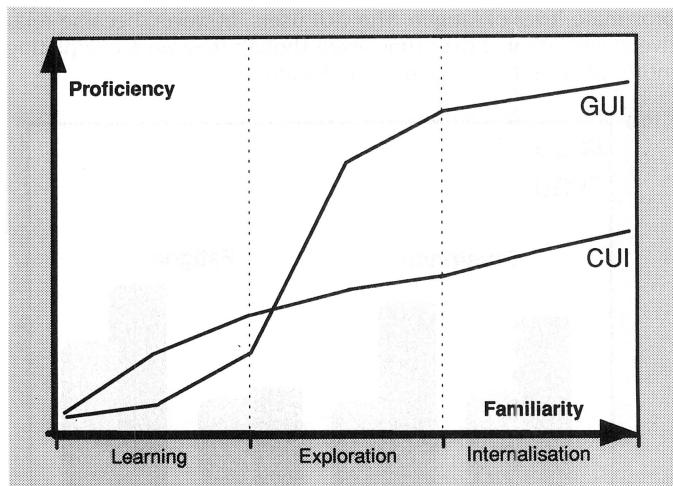


Figure 4. The navigation theory used by TBS shows a marked difference in the learning curves between users of the two interfaces – GUI users initially learn more slowly while they are mastering the mechanics (the mouse and pull-down menus, for example), but once they entered the exploration phase, they learned much more rapidly than their CUI counterparts, who continued to learn linearly, one function at a time. 'Internalisation' is the experienced user's integration of one or more applications' functions and features and access to them.

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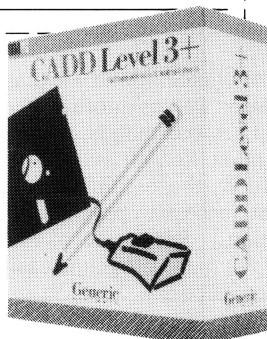
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AMI VS WORD FOR WINDOWS

MICROSOFT'S WORD for Windows (WFW), the most recent arrival, can be regarded as a migration from wordprocessing of the non-graphical Word, with DTP features being built onto a WP base. Ami Professional began life as a deliberate hybrid – it was intended from the outset to supply all the features a user could desire for both wordprocessing and publishing.

As yet, neither program has entirely met its objectives. The migrant WFW has not entirely been assimilated into the desktop publishing community, while the hybrid lacks a couple of features that are desirable in both wordprocessing and DTP. However, both are easier to use and have an order of magnitude more powerful than most of their straight WP rivals (or low end DTPs like GEM Publisher or First Publisher) and both do some things so well, such as group editing of documents or customisable mail-merging.

Both WFW and Ami operate under the Windows Graphical User Interface (GUI), but despite this shared base, they are quite different programs both cosmetically and functionally. This is because, despite the fact that Microsoft wrote both WFW and Windows, Ami conforms much more closely to Windows standards than WFW. Ami's authors have taken the concept of the graphical user interface (that is, that a picture is worth a thousand words) to heart, whereas WFW's authors appear to have paid lip service only.

Both programs naturally operate inside MS Windows, and both have standard drop-down menus which can be activated using the Alt key or the mouse. Ami uses about 20 short-cut keys, for example, Ctrl-Z toggles the display of the Styles box, however, most commands are menu activated, and all keyboard commands have menu equivalents. WFW loads over 50 commands onto the function keys alone – there are normal, shifted, Control, Alt, Control plus Shift and Alt plus Shift commands, as well as another 40 or so alphabetical key commands, using the Control key, and shifted Alt and Control keys. Undoubtedly, these commands provide immediate access to program functions, but they partly defeat one of the objects of GUIs – to make programs easier to drive.

Three years ago, wordprocessing and desktop publishing were separate domains. Today, a number of programs are spanning both applications. Steve Keen evaluates this side of Ami Professional and Word for Windows (with a little help from Framework III and Ventura Publisher Professional Edition).

Ami's chief approach to short-cuts is a graphical one – a side bar containing icons representing frequently accessed commands. I frequently regard icons as less comprehensible than their English

equivalents, but that can't be said of Ami's because they are brilliantly drawn and most are immediately obvious.

Paragraph styles are essential in desktop publishing, and the management of styles marks another difference between the two programs. Ami conforms to the Windows standard with a Styles window that lists all available paragraph styles in a conventional Windows List Box. The window can be toggled off, moved about the screen, and stretched or shrunk. But basically, it intrudes very little into the process of entering text. WFW uses what it calls a Ruler, which takes over about an inch of a VGA screen and employs a non-standard list window which has to be clicked on to activate a list of styles.

Overall, Ami easily takes the user interface points, but there is at least one respect in which WFW's interface outpoints Ami. Both programs support multiple documents in different windows. However, a window can be split in WFW to allow you to see different portions of the same document at once.

Editing and views

BOTH SUPPORT multiple views of your document, beginning with Draft, which shows the minimum formatting informa-

Desktop publishing hardware

PROBABLY THE most necessary tool for desktop publishing is a high resolution monitor. The VGA standard is suitable for simple text entry, but when turned to displaying a 'what you see is what you get' image of your page, all you see is about one-third of what you will get. If you attempt a full-page view, you'll get bands which indicate where the words are, and extremely poor representations of your graphics.

You need about 1000 lines by 1000 dots before the resolution on the screen becomes a reliable and legible guide to the final appearance of the printed page – this works out to about 120 dots to the inch, which is about the same as a reasonable dot matrix printer. Screens which can display that resolution are not cheap, however, the Eizo range of monitors and cards distributed by Megavision have developed a means of achieving similar re-

sults on a screen which can display only 768 lines by 1024 dots. The Eizo driver card maintains a 'virtual' screen image of 1024 x 1024, and vertical scrolling to show the 'missing' 256 lines is instantaneous. Rudi Hoess, Megavision's managing director, calls this the 'minimum price configuration' that is necessary for CAD/CAM and DTP, with a price tag of around \$3000 (there is also a monochrome version for around \$2000).

Megavision supplies a number of software drivers to allow programs like Design CAD, Framework, Windows, Ventura, PageMaker and GEM to take advantage of the higher resolution, and installing them is a relatively simple matter. Be sure though, that your hardware supports the card – while most IBM compatibles will, we were unable to get the Eizo card to function in a Toshiba 5200 (Toshiba are trying to rectify this at present).

AMI VS WORD FOR WINDOWS

tion, and ending with Facing Pages view. Ami has six views to WFW's four, and Ami's are all far superior to their WFW counterparts.

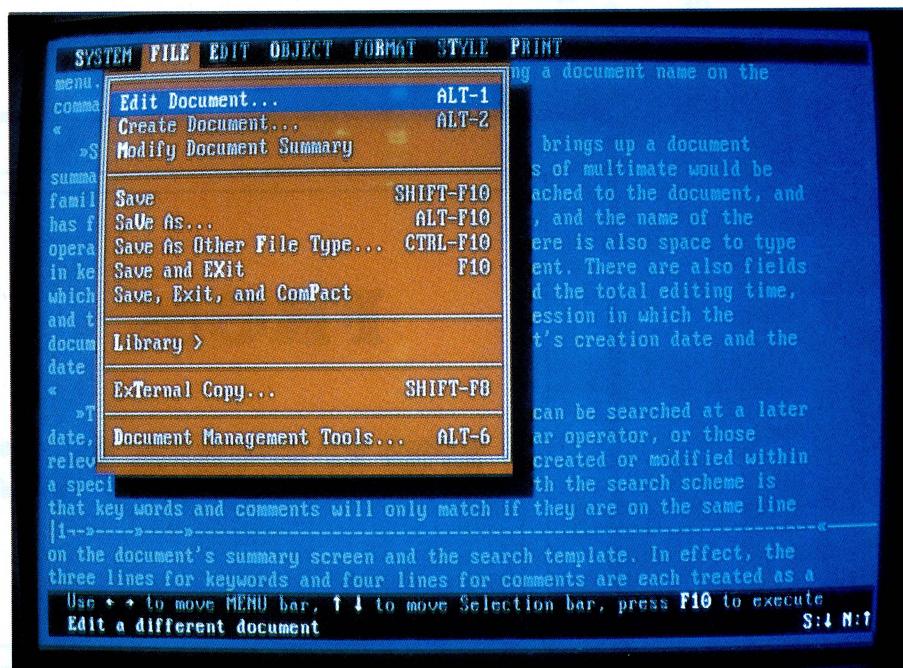
In Draft mode, Ami shows a simple unformatted 80 character-wide view of your text, which is excellent for fast text entry. WFW's Draft view wraps the text within the currently defined column widths and shows only one column, which means a display of as few as 25 characters to a line if a two column style is active. It also justifies the text if the paragraph style is justified, despite the fact that the characters per line in Draft mode (with 12 point fixed space characters) bears no relation to the characters per line in layout mode.

Ami's Standard view displays all formatting information – font, justification, columns, headers and footers, as well as frames and graphics; the comparable WFW view is Page. Text size in both cases is standard for Windows applications. Ami has an additional view (Normal) with no parallel in WFW, which guarantees to show you a full line of text, rather than truncating the end of each line as is common with the Standard view.

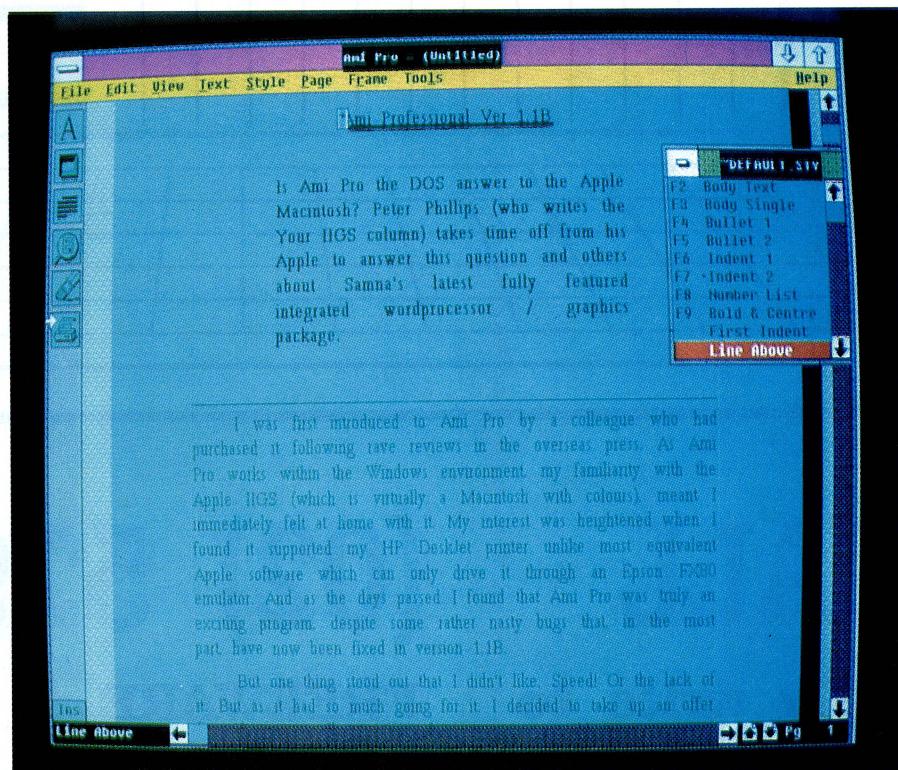
While Ami's Standard and Normal views are quite acceptable for text entry and graphics placement, however, the WFW manual actually advises against using its corresponding Page view for text entry, recommending instead its Normal view. This shows font, justification and graphic elements, but only one column at a time, without page, header or footer information. As with the Draft view, this means as much as half of the screen remains blank if your current format involves two columns.

Ami's Page view shows an entire page to the best resolution of your screen, and you can edit in this mode; no matching view exists in WFW. On the Eizo monitor (see the box item 'Desktop publishing hardware') Windows gave readable characters, while on the Toshiba VGA screen anything below 18 point was 'greeked' – but you could still add and edit text, frames, and so on. At the other end of the spectrum, Ami offers an Enlarged view, which assists with placement of frames, and so forth, again, WFW has nothing comparable. Finally, Ami's Facing Pages view corresponds to WFW's Print Preview, and with neither program can you edit in these modes.

Ami's superiority isn't limited to the number of views or its comparative features – its handling of text entry and speed of display creates a gulf between the programs.



Microsoft's Word represents a migration from wordprocessing, with desktop publishing being built onto a text-oriented application, while Ami Professional was intended from the outset to supply all the features a user could desire for both wordprocessing and publishing.



Both Ami and Word implement the standard Windows interface quite well, but the icons in Ami are more intuitive for new users.

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AMI VS WORD FOR WINDOWS

In Normal mode, WFW redraws the active line after each character is entered, and thus results in a line that appears to blink at you. It is worse in Page view, because paragraphs and pictures 'blink' as each new line is wrapped. The only acceptable way to enter large amounts of text into WFW is to run the program in Draft view with only a single column format, and later convert to Page view to vary columns and insert graphics. This forces you to separate the working-period and DTP phases, which partially defeats the purpose of combining both functions in the one program.

Ami delays redrawing a line until the keyboard has been inactive for a second or so, which results in a far more readable, stable display, and much faster typing. It also offers faster screen handling in general – Ami took one second to redraw a screen in Normal mode while WFW took 12 seconds for the same operation.

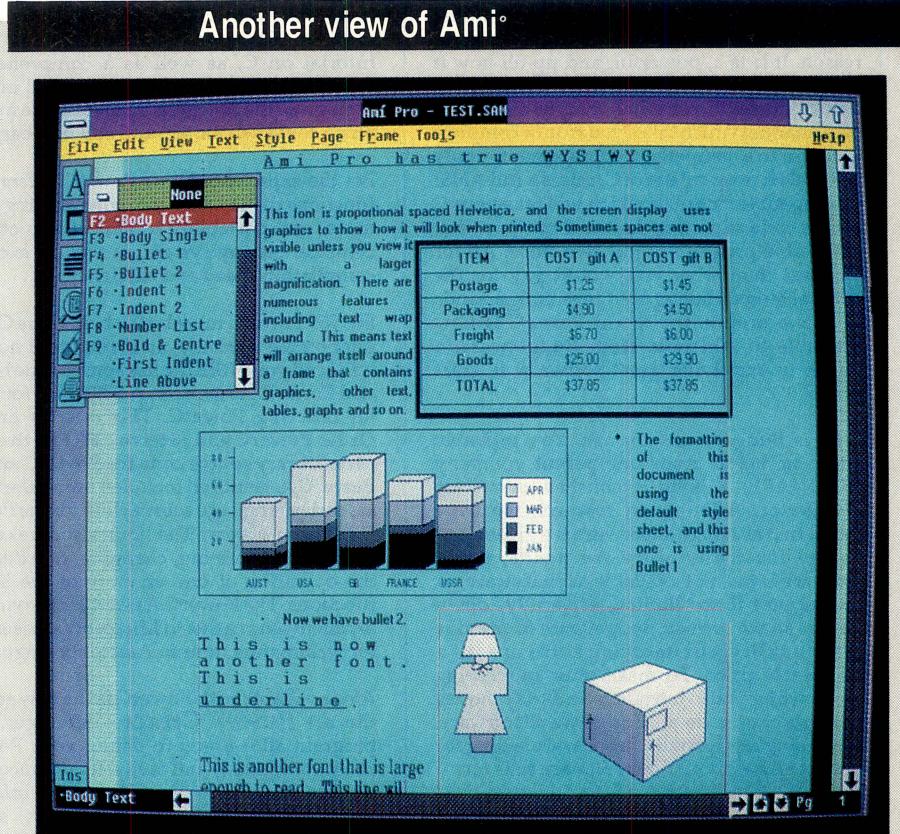
Wordprocessing features

OVERALL, AMI stands out as the package with greater finesse – where WFW and Ami both have the same feature, Ami's implementation is usually better. However, there are several features that WFW has that are lacking in Ami, and some of these may be so important as to rule out Ami for some users. Among these are outlining, equations and annotations.

An outline is similar to the table of contents of a book, with the pluses that you can go straight from the outline to the relevant 'chapter', and if you move an outline entry, the text associated with it is also moved. In a long, structured document, the outline normally becomes your table of contents, which lets you go instantly from drafting a document to formatting it, and WFW's graphical outliner is seamlessly integrated with document formatting.

WFW formats equations as a special type of embedded field. To generate mathematical symbols, you type a backslash followed by a letter. You can split the screen, enter the codes in one pane and see the results in the other. While this works, and gives WFW a complete advantage over Ami, it is not as easy to drive as programs like Mathcad, which modify the keyboard to let you type mathematical expressions. There is also no direct support for Greek characters (presumably you have to activate the Symbol font to get them, which is cumbersome) and a number of vector symbols are missing.

WFW's annotations allow several peo-



Ami Pro combines a powerful wordprocessor with an equally powerful graphics section. Import scanned pictures, draw your own graphics, build tables and graphs and let the text flow around it all. This is desktop publishing to rival a Macintosh.

Peter Phillips (of 'Your Apple IIGS') has been using a GUI for years – his ideas on Ami differ somewhat from Steve Keen's . . .

I WAS INTRODUCED to Ami Pro by a colleague who had purchased it following rave reviews in the overseas press. As Ami Pro works within the Windows environment, my familiarity with the Apple graphics interface meant I immediately felt at home with it. My interest increased when I found it supported my HP DeskJet printer – unlike most equivalent Apple software which can only drive it through an Epson FX80 emulator.

This is a program that Apple users will relate to, as will anyone needing a simple-to-use desktop publisher program.

Ami Pro is virtually a desktop publisher with a fully-featured wordprocessor,

graphics and data presentation modules, in which the latter allows tables and graphs to be constructed. As well, it supports macros in a way that is almost overwhelming, and a macro language manual is available that compares with a typical programming manual.

Wordprocessing

I HAVE A few minor complaints about the wordprocessor section of Ami Pro. The first is that the ANSI character set is used rather than the IBM graphic characters available in programs like WordStar – of course, to some this may be an advantage. Secondly, large documents become rather unwieldy, as you can't scroll through the text as easily or quickly, particularly when graphics are in the document. However, selecting draft mode (which hides the graphics), gives faster scrolling, and there is a 'go to' function which allows jumps to various points in the document. I have also found a few inaccuracies with the WYSIWYG feature.

However, the screen display is generally quite accurate, and the facilities available match those found in most high-class wordprocessors such as WordPerfect and Microsoft Word. Style sheets are used to format a document, and once you understand the concept, virtually any arrangement of the text is possible, including multiple columns, indents, centering and so on. For example, the 'bullet and indent' style can be selected with a function key, in which a bullet • is printed before the selected paragraph, after which all text is indented to a preset amount.

A nice feature is the range of underlines, and there is even an 'overline', in which a line is drawn over the first line of a paragraph. To some, the wordprocessor will seem excellent, enhanced by ease of use and the WYSIWYG feature. But, even with my Apple background, I have always found the combination of a mouse and a wordprocessor too fiddly and time consuming.

Graphics

LIKE MOST similar programs, graphics are entered into movable 'frames', which can contain text, graphics, a table or a graph. Text outside a frame can be selected to wrap around each frame if required. The graphics capabilities are quite extensive, and by importing a circuit diagram scanned on a HP scanner, I have been able to create a library of circuit components by simply drawing outlines over the scanned version. This way, I can now draw complete circuit diagrams very quickly using my 'library' and have the circuits anywhere in the text. Previously, I used a circuit drawing package, and glued the pictures onto the printed page.

A nice feature of Ami Pro is the number of 'views' available. The smallest is two facing pages, the next is a full page view of the current page, through the so-called 'standard view' to an enlarged view up to the 'working view', which can be any magnification up to 400 per cent. All views except 'two facing pages' allow frames to be moved, text to be entered and so on.

The drawing tools include straight lines, circles, ovals, rectangles, squares, text entry, a drawing pen and the usual 'select object' tool. The drawing pen is used to draw shapes, al-

though once drawn, the shape can only be changed in size and aspect ratio. Thus, a minor error in the drawing can't be corrected, making it necessary to start all over again. An enclosed area can be filled to any of a range of patterns or colors, and the outline can be set to various line widths and styles.

Tables and graphs

TABLE CONSTRUCTION is a big feature of Ami Pro. Tables that contain numbers, spreadsheet type equations and/or text can be produced very quickly, then positioned to suit. A table is created by selecting Tables from the Tools menu, then after setting the number of rows and columns, the outline will magically appear either in a selected frame or at the cursor position. I have learnt to always use a frame, otherwise the table becomes difficult to shift. The size of the table can be changed with the cursor by dragging each line with the mouse, and columns and rows can be added or deleted. Individual cells of the table can be filled with various patterns, and have different outlines, and contents can be copied to other cells – in fact, I can only rave about the tables facility.

Graphs is another strong feature of the program, and data for a graph can be entered into the clipboard or a dialog box (either imported from another application or entered manually). The resulting graph, which must be in a frame, can be of various formats, including bar, pie, line, three dimensional bar and so on.

For basic power input wordprocessing tasks, I will still turn to WordStar on my PC, but when I need hard copy that is a bit more fancy, then Ami Pro is definitely the answer. This program is breaking fresh territory, and represents a new class of wordprocessor that used to be called a desktop publisher. All that's needed now is for someone to make all the IBM compatibles truly compatible, and for Dos to be made comprehensible to mortals. But as graphic type interfaces, such as Gem, Windows, and the up-and-coming NewWave by HP (which supports Ami Pro), become more popular, Dos will disappear into icons, and the IBM will actually be user friendly (or should that be user Ami?).

ple to contribute to a document. If you wish to make a comment on a section, your initials are inserted into the text (in a non-printing format) and a 'footnote' with your initials is attached. Comments can be easily pasted into the document, thus making group authoring quite feasible. The program supports this with a revisions tracking system, which highlights paragraphs that have been added or changed since the last save, and can compare versions of a document.

Ami has no equivalent to any of these features, so if they matter to you, WFW wins hands down. On the other hand, Ami's implementation of a shared feature, mail-merge, can tip the balance its way if form letters are important to you. Both programs have mail-merging, however, Ami lets you preview each letter, modify text, or format before printing.

Apart from that, both programs offer an extensive range of wordprocessing features, from the basic cut-and-paste, through to footnotes, spelling checker, thesaurus and macros (in Ami's case, the macro language is almost a full-blown programming language). Both have support for tables (with Ami offering the better facility) and therefore, eliminating the need to ever set tab stops again.

Desktop publishing

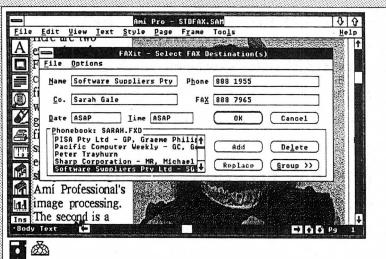
WFW'S INADEQUATE Views and tardy screen handling put a large black mark against it in the DTP stakes, despite its strengths in style management. It certainly would not be a first choice if DTP was your main requirement, unless you had an overwhelming need for one of its associated features such as group annotation of a document. Ami, on the other hand, provides an extremely strong showing in desktop publishing, combining ease-of-use with a degree of performance that frequently outclasses Ventura.

However, both have superior style management systems to Ventura. The basic attributes of a paragraph style include font, justification, spacing and breaks. Each of these involves a separate menu choice for each style under Ventura, whereas Ami and WFW integrate them onto one form, with all styles accessible on the form.

Ami is a conventional desktop publisher when it comes to page layout and columns, frames and graphics handling. If you want to insert a dual column area on a single column page, you add a frame and format it as a double column. A change to dual column layout on a page basis re-

Desktop published faxes

SOFTWARE SUPPLIERS, the distributors of Ami, have recently acquired a software package which could enable 'desktop publishing' of faxes. Called Faxit, this is a



compact TSR which runs under Windows and intercepts output intended for the printer, redirecting it to a fax card instead. With Faxit, you could develop a document under WFW or Ami, and fax the entire document, complete with fancy

fonts and graphics, without ever having to print it out.

This has several advantages over the current approaches. If you are using a paper fax, you face significant degradation of print quality through the mechanical deficiencies of both the sending and receiving machine. If you are using a fax card (as I do), you normally have to be satisfied with sending either screen size images only, or simple text files formatted in 12 point system font by the fax card.

Faxit removes one mechanical device from the transmission system, thereby greatly increasing print quality. And, it lets you print an entire document of desktop published quality, rather than simple screen shots. For both reasons, it should have enormous appeal to the CAD/CAM market as well as to normal senders of faxes.

quires a new page, and imported text and graphics go inside the frames. WFW is unconventional because it does not have frames – the imported graphics and tables are pasted straight onto the page. You get dual columns on a single column page by inserting and formatting a new section. Ami's conventional approach has several advantages over WFW's, such as repeating frames on all pages, bordering a frame, and so forth.

Ami imports from many more graphics formats than does WFW, and it supports bit-map imports with excellent image processing powers – to sharpen edges, soften or enhance contrasts – which are not even available in Ventura. Additionally, it has built-in business charts of a high standard, plus a free-hand drawing facility with which you can annotate charts.

Generally, Ami offers superior features to Ventura, let alone to WFW, in the desktop publishing arena. However, it also omits a small number of useful DTP tools.

But, Ami does not support a 'drop caps' (like the big capital 'M' at the beginning of this article) as the opening character. There is no method for applying a caption to a bit-mapped frame, it does not support automatic cross references (for example, 'continued on page 33'), and there is no control over column breaks – which means that a section heading can be orphaned at the bottom of a two column layout. Those four blemishes aside, Ami is a worthy foe to the market leader, Ventura.

For magazine or newspaper style layouts, you can't avoid using Ventura to add frames, graphics, and so forth. Then, the appeal of being able to edit your document as you lay it out is much greater – especially when the rival programs are much easier to use. And, it is due to the ease-of-use that Ami and WFW most clearly transcend Ventura.

Conclusion

THERE IS NO clear winner in a contest between WFW, Ami and Ventura – what is the best product depends upon your own needs. WFW is the least polished of the three and a poor choice for desktop publishing, but it offers some wordprocessing features that are absent from Ami and Ventura – in particular, outlining, joint authoring and equations. Ami is brilliantly designed and extremely easy to drive, but it lacks a couple of fine touches in desktop publishing. Ventura offers all the features one could desire of a desktop publisher, but its handling of some aspects, such as footnotes, is not as good as Ami's, and it is much harder to learn.

Generally, if you simply want to print better looking documents, or if you produce documents as part of a team, WFW is the front runner. If you require layouts of great variability, Ami wins. But, if structured lengthy documents are the go, the Ventura (with a decent wordprocessor) is still king. □

Ventura with Framework III versus Ami

THERE ARE VERY few people who would use Ventura to enter text as well as to lay it out (though I do know someone who does). Ventura is customarily used in conjunction with a text editor, and my WP SideKick to Ventura is Framework III. With Framework's outlining I can structure the text document exactly as I intend the published document to be laid out. And, with macros, I can easily add the paragraph tags which Ventura actually uses to format text. For example, in a magazine article, the top level of the outline becomes the Section of the document, and the second level is a Subsection. With the document in outline view (where the actual text in each section is hidden), a macro Alt-S adds the Ventura paragraph tag "@Section =" at the beginning of the outline text. Then, I export the document as a text file, load it into Ventura, and all my layout work is automatically done. Similarly, text inside the symbols <SF> becomes a footnote, text inside <D> is boldfaced, and so on.

This approach works best with large documents with a consistent structure, and it obviates the need to ever look through the full document inside Ventura. Once the paragraph styles are defined, Ventura is simply used as a printing system. Ami and WFW are less competitive against this kind of usage since the need to see what your document looks like as you type it isn't required.

Product Details

Product: Word For Windows

Distributor: Microsoft

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Price: \$735 rrp

Word For Window offers more power than most, if not all, Dos-based wordprocessors.

Product Details

Product: Ami Professional 1.1B

Distributor: Software Suppliers,

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(02) 888 1955

Price: \$699 rrp

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CONTACTS PLUS

NEW CATEGORIES of software don't emerge out of the woodwork every day. But, one that has appeared in recent times is the Contact management genre of software. And, to the surprise of many, Australian companies are up with the leaders both at home and overseas.

Contact management software is a multi-function software designed to facilitate interaction with business contacts. Typically, it blends a business database, a scheduler, a dialer, a wordprocessor and a mailmerge facility into one package. For the executive, telemarketing person, or consultant, such a combination is very attractive.

Here at *Your Computer*, the sales staff use Contacts Plus to track their clients – a standalone licence costs \$495, a networkable version is \$595, plus \$145 per node.

Contacts Plus has all the standard contact management software features and a few others. It works with the NetComm facsimile card, interfaces to the Australia-on-Disc CD-ROM database, maintains a history of client contacts, and runs as a TSR in just 7K of memory.

Brylar was set up by Peter Scarfo, who switched from accountancy to computing some 14 years ago. Three years ago Scarfo, a programmer called Adrian Lake and two other friends, decided that the PC industry needed their combined talents. The four bought a shelf company, Brylar, and went into business.

At first, the business was in consulting and selling PCs. The four founders met every Saturday morning to discuss company directions, and eventually, conceived their first product.

AutoDial, which hit the streets in August 1988, was a piece of hardware that allowed a PC to silently dial an on-screen telephone number. While AutoDial failed to excite the telemarketing community, the software with it managed to raise eyebrows.

Written in Turbo Pascal, it

A new category of applications is emerging – contact management software. Mark Casey tells of one local company's growing success . . .

maintained a business card-like database of contacts, with space on each record to add a few notes. 'Customers suggested things such as better search facilities, more fields, mailmerge and so on,' recalled Scarfo. Staff documented the suggestions and the result was a product called Contacts Plus.

Version 1 was released in April 1989.



Peter Scarfo, managing director of Brylar and one of the developers of Contacts Plus is working hard on the export initiative: 'I have about 15 companies in the US evaluating the product and there has been some fairly good feedback. I believe that by Comdex, in November, we will have Contacts Plus on the US market.'

Version 1.1 appeared three months later, with extra features such as user definable reports.

Brylar had been turned down by Logo when it was approached to handle the distribution of AutoDial. When Brylar returned with Contacts Plus in hand, it was a different story and Logo took on both products.

Primary software

DEVELOPMENT continued apace and version 2 was released last November. It featured a complete rewrite of the scheduling section, a more flexible appointments system, a history file and more user-definable report fields. Any of 15 fields can now be defined by the user. The TSR portion of the program was reduced from 99K to just 7K and the program became networkable.

Contacts Plus soon found favor with customers. And, Scarfo claims it has more

than a thousand users Australia-wide, including financial institutions such as AMP, National Mutual, Telecom and several government departments. On a smaller scale, Scarfo said that many Logo dealers had adopted the product for prospecting, and that it was used by many one-person sales organisations as their primary software package.

Wayne Carruthers, a consultant in the telecommunications field, uses Contacts Plus as his primary software for scheduling, wordprocessing and client management. But, his strongest reason for using the software is Brylar because 'the developers are actually prepared to listen to their customers.'

Carruthers finds Contacts Plus is able to perform powerful wordprocessing tasks and files can be used with other programs. 'As a total package, it is better than running with a separate wordprocessor.'

Peter Voorderhake, of Maxi-Miza Computer Systems in Brisbane, has been using Contacts Plus since its first release. He mainly

CONTACTS PLUS

uses it for running a national membership database for the Psoriasis Association. Originally stored in a DB2 database, it was moved to Contacts Plus because the searches did not need programming and were very fast.

He is mindful of the attempt by Adaptive Electronics to launch Tracker in the US. Though the product was well received, the cost of getting the market was a major drain on Adaptive's resources.

Brylar's approach will be to encourage smaller dealers to order directly from Australia, possibly pooling their orders. Scarfo said the company had the capacity to supply up to 5000 units per month. Assistance in penetrating the US market may come from Alloy. Contacts Plus has been certified to run on the Multiware netware and Scarfo is optimistic that Alloy will help promote the product. Archives, the local Alloy representative, confirmed that the two companies were cooperating on a friendly basis.

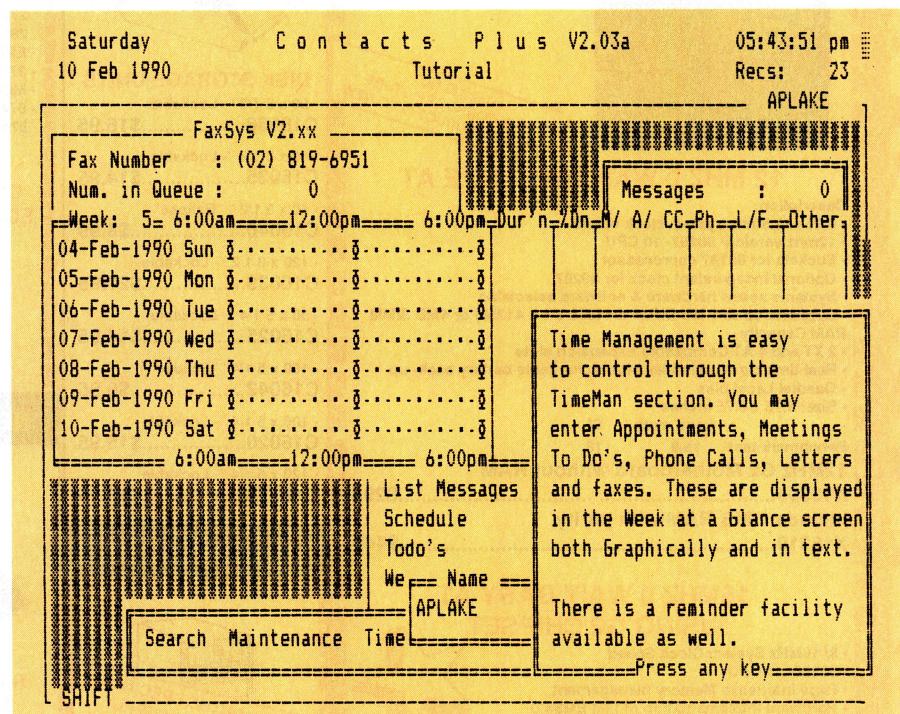
Contacts Plus does not exist in an application vacuum. Strong competition comes from Tracker, another Australian package with around 45,000 users (which Amstrad is bundling with its PCs) and ACT!, from Conductor Software in the US. Scarfo maintains he was unaware of either package when Contacts Plus was being developed. 'I was using Q&A [a flat file database] but it didn't do the type of things that I wanted. As for SideKick, that was too clumsy.'

He said that the software sells itself if it is demonstrated properly, but added that often potential customers didn't understand its power.

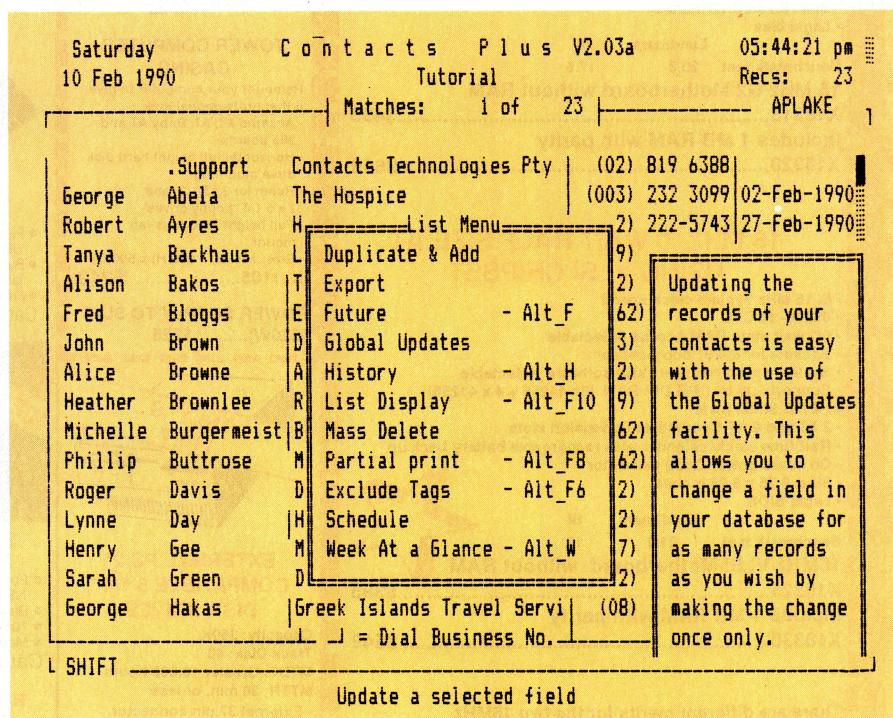
The next release of Contact Plus, version 2.5, should be released by the time you read this, and it's the version that will be shipped to the US. It will feature user-definable reports in the scheduler which will allow users to have the software make time and cost calculations. Another feature is a scripting function that is able to bring up a script of perhaps a canned presentation when a number is dialed.

Looking further out, Scarfo said that a scanner interface was in the works. Documents could be scanned in and then displayed at the push of a key. And, a link to the Intel Communications Coprocessor is also being developed which would be a major feature in the US market.

For Brylar, much hinges on the US market. The product is good, but international sales would stimulate a more international version of the software that is better able to compete in a booming market. □



While Brylar's first offering, AutoDial, failed to excite the telemarketing community, the software with it managed to raise eyebrows. It has now been greatly enhanced with users' suggestions on such things as better search facilities, more fields, mailmerge and the notepad.

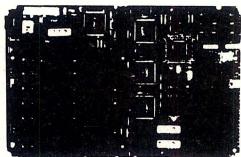


Contacts Plus has a powerful database that doesn't require programming for searches or global updates.

\$AVE \$AVE

ROD IRVING ELECTRONICS

"NEW" 286 MOTHERBOARDS



THIS IS NOT
THE CORRECT PICTURE
AS THE PRODUCT IS SO NEW

12 MHZ 0 WAIT HALF SIZE AT

Description:

- 6.25 / 12.5mhz system clock speed
- 12mhz version- 80287- 10 CPU
- Sockets for 80287 coprocessor
- Optional independent clock for 80287
- System speed hardware & software selectable
- Supports up to 1 MB DIP (8 x 44256 + 4 x 41256) or 4MB SIMM RAM Capacity
- 2 XT and 4 AT Compatible Expansion slots
- Real time clock/ calendar with rechargeable battery back- up
- Quadtel Legal bias
- Size: 8.75 x 8.75 inches

Land mark SI

Benchmark test 15.8 13

12MHz G2 Motherboard without RAM

X18305.....\$295

Include 1 MB RAM with parity

X18310.....\$449

16MHZ 0 WAIT BABY AT USING G2 CHIPSET

8/ 16MHz System Clock Speed

- 80286- 16 CPU
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- Hardware Implementation of LIM EMS4.0
- Sockets for 80287 Coprocessor
- Optional Independent Clock for 80287 Coprocessor
- System speed Hardware & software selectable
- Supports up to 1 MB DIP RAM (8 x 44256 + 4 x 41256) or 4MB SIMM RAM
- 2 XT and 4 AT Compatible Expansion slots
- Real time clock/ calendar with Rechargeable battery back up
- On board power good generator
- Size: 8.75 x 8.75 inches
- Legal bias

Land mark SI

Benchmark test 20.8 17.6

16 MHz G2 Motherboard without RAM

X18315.....\$495

Includes 1 MB RAM with parity

X18320.....\$649

16 MHZ 0 WAIT HALF SIZE AT USING VLSI CHIPSET

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- System speed hardware and software selectable
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- 2 XT and 4 AT Compatible Expansion slots
- Real time clock/ calendar with rechargeable battery back up
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- Size: 8.75 x 8.75 inches
- Legal BIOS

Land mark SI

Benchmark test 21.8 18

16MHz VLSI Motherboard without RAM

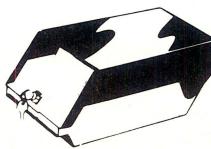
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Include 1 MB RAM with parity

X18330.....\$549

There are different merits for the two 16MHz motherboards. The 16MHz G2 motherboards support hardware EMS and later version will also support shadow RAM. The 16 MHz VLSI motherboard can only support software EMS and do not have shadow RAM, but it operates in true zero wait state. Unlike G2 or neat motherboard which operates under page mode, there is no need to adjust page sizes in order to attain maximum speed.

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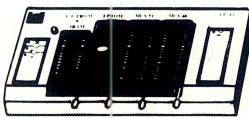
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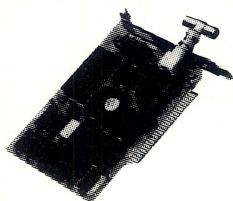
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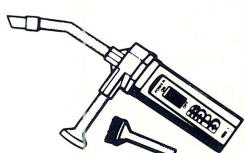


NETWORK CARDS



R-NET/B INTERFACE NETWORK CARD

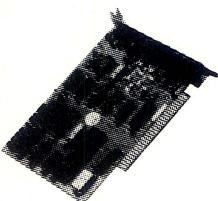
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- Cat.X18156\$275



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- Built-in RS232 port, stereo phone jack and LAN UPS connector
- Supports power monitor, LAN UPS
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MAGIC STAGE

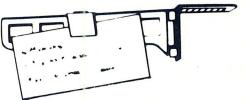
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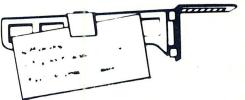
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- Fully compatible with Novell NE-1000 Ethernet card
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- Meets the IEEE 802.3 standard
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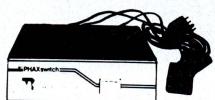
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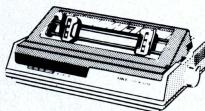
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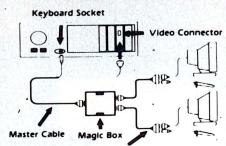
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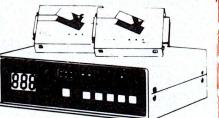
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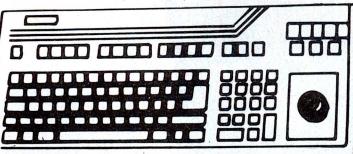
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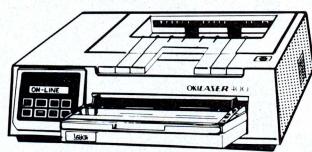
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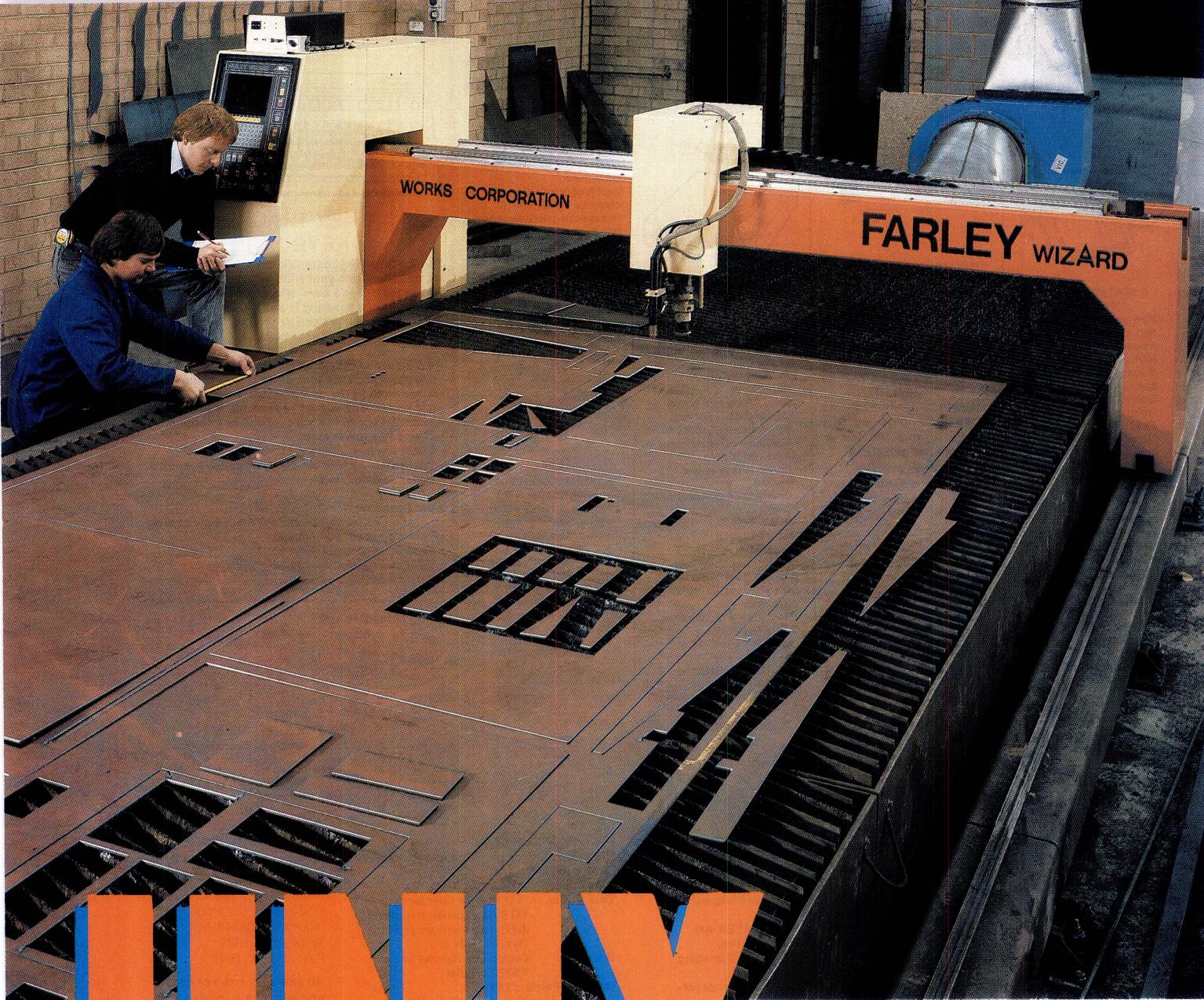
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UNIX

TARZAN'S GRIP FOR THE COMPUTER WORLD

Victorian-based Farley Manufacturing is using Unix to glue its operations together. Mark Casey reports . . .

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Few users know this better than Farley Manufacturing, a Victorian designer and builder of sheet metal cutting systems. From a standing start in 1983, it has grown to 130 staff, has offices in the UK, West Germany, France, Japan and the US and anticipates revenue this year of \$14 million. Without computers, none of this would have been possible. Farley's bright orange cutting machines, with names such as Wizard, Stiletto, Trident and Fabricator, use plasma or oxyacetylene torches to cut or drill through steel and are sold to shipyards, steel distributors and manufacturers of anything from air conditioning ducts to trucks.

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The machines are designed by computers, controlled by computers and use computers to help customers design their complex shapes. The whole operation depends on computers – ones that have been introduced at various times for various needs. Throughout Farley you will find PCs, Hewlett-Packard and Apollo workstations, Labtam systems and Motorola controllers. What they have in common is the operating system: 'Unix was chosen to integrate with the other variables in the factory environment. With a Unix system, you can have two or three operators on at the one time. Manufacturers often require two or three machines going at the one time and two or three programmers going at the one time,' said Mark Nolan, Farley's marketing coordinator.

Computers were first used to develop applications that customers could use with the Farley machines. Farley originally chose Australian-built Labtam computers, which ran Unix. But in the last 18 months, substantial amounts of Hewlett-Packard and Apollo hardware have been purchased, largely to meet the needs of customers in the US.

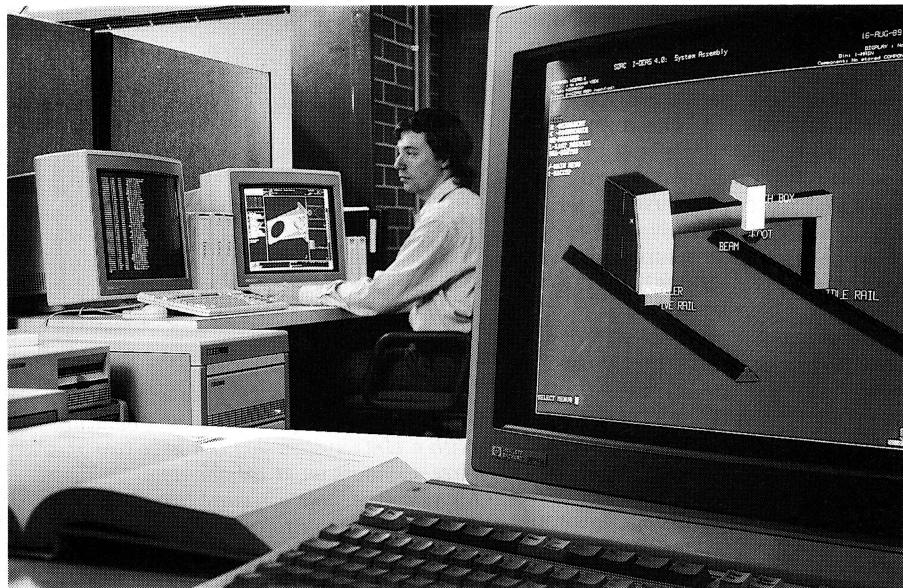
'... not such a big deal.'

UNIX SYSTEM V is now the underlying operating system. 'We use Unix for development, for delivery of systems to customers, for mechanical design, for development of the controller and for administration,' said development manager, Hennie Roos. 'But it is not such a big deal. It is only an operating system,' he added.

Computers play a vital role in all stages of Farley operation, starting with the initial design process. The machines were originally designed by manual methods. For finite element stress analysis and machine simulation, the company used a CAD system linked to a VAX facility at the CSIRO.

Component testing is now done in-house using Farley's own computers. 'In general, we find that with delivery times in Australia so unreliable, doing it in-house has its benefits. We have come a long way since we started. A year ago we were producing one machine a month. Now it is one a week. If it wasn't for introducing in-house facilities, we would never have been able to do that,' said Roos.

Four Apollo workstations are used for mechanical design that involves simulation and modelling of components. Another two DN3500 workstations are used



Four Apollo workstations are used for mechanical design involving simulation and modelling of components. Another two DN3500 workstations are used for electrical design and engineering. The system runs SDRC and IDE design and drafting software, supplied by Vipac Engineers and Scientists and output is usually to a Hewlett-Packard plotter. Older designs are manually moused into the system as needed.

for electrical design and engineering. The system runs SDRC and IDE design and drafting software, supplied by Vipac Engineers and Scientists and output is usually to a Hewlett-Packard plotter.

Older designs are manually moused into the system as needed. 'It is an ongoing process. But as we bring in a drawing, it is changed and modified for the job in hand,' said Roos.

Enhancements

THE SYSTEM IS continually being enhanced. 'We are moving in the direction of a completed drawing system that will provide a centralised numbering system and a parts list. We can do it already for simple parts,' said Roos. When a machine is ready to be manufactured, the design files are translated to a format suitable for the computerised milling and machining equipment.

Each machine has a built-in Motorola processor running pSOS, controlling its operation. Farley staff have developed all the controller software, using \$60,000 worth of Intermetrics real time compilers, linkers and locators running on the Unix operating system of five Apollo DN3000 development platforms. The program is translated from C into a run file for the Motorola's 68020 processor.

Customers download cutting patterns,

designed on their computers, to the cutting machine controller by fibre optics. 'Our software has a built-in translator that will translate a CAD file into a CNC code compatible with our machine,' said Roos.

But Farley also sells its own Unix software for the customers to use. Said Roos: 'Some of the customers have an installed Unix base already and some of them have clear preferences. You go to a general type of operating system because you want as many users as possible to make use of the system.'

Packages

THERE ARE FOUR main packages. Shape is a CAD-like free shape generation package that outputs files to drive the cutting machinery. With its companion module, Nest, users can nest a number of shapes together, reducing the amount of metal needed for a given number of parts. Parashape breaks an existing drawing down into shapes which can be redimensioned and renested, or generate flat patterns for three dimensional objects.

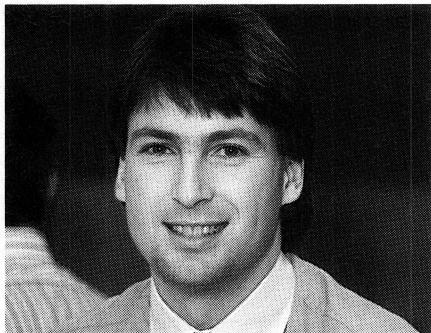
Estimate is Farley's time and cost estimating package, with which customers can provide quotes, plan production and develop budgets. Platemaster is an automated parts management package

that automatically nests parts, generates cut paths and schedules part production.

The applications software was originally developed on the Labtam computers in Pascal and C for maximum software portability. But the software does not need to run on a Unix platform. 'The operating system that you use for development does not necessarily tie into the operating system used to support it. The customer can run the thing on a Commodore 64!' said Roos.

Ten development and software support staff look after the applications software. PCs and 9000 series HP workstations are used for development and maintenance. The HP workstations have the advantage that they can run different operating systems simultaneously. Coping with the diverse software environments in the organisation is a challenge for the Farley team. That, perhaps, explains why there are around 40 graduates on staff, each specialising in different areas.

But underlying the hardware and software peculiarities is the Unix operating system, understood but largely invisible.



'Unix was chosen to integrate with the other variables in the factory environment. With a Unix system you can have two or three operators on at the one time. Manufacturers often require two or three machines going at the one time and two or three programmers going at the one time.'
— Mark Nolan, Farley Manufacturing's marketing coordinator.

Roos and his staff have most to do with Unix. 'You need to get involved with the operating system when you invoke sub-

routines, files and so on during simulations on the Apollo workstations. Then you have all the device drivers used by the different applications,' said Roos. It is sometimes not easy keeping all the pieces glued together.

'We have a complex environment because the task is complex. You need clever tools and clever people,' said Roos. Pulling together all the systems is thought about, but is considered impractical. It is not difficult to bring non-Unix hardware into the system with serial links, file translation and transfer utilities.

Even so, next year the plan is to link the design and testing section to the manufacturing side, through bill of materials and inventory functions, and probably with the milling and machining machinery being driven by output from the design computers. Is one unified operating system worth it? 'You have to take cost into it. With that considered, it is probably just making it,' said Roos. It is not a perfect solution, but in a complex world it certainly provides a workable solution. □

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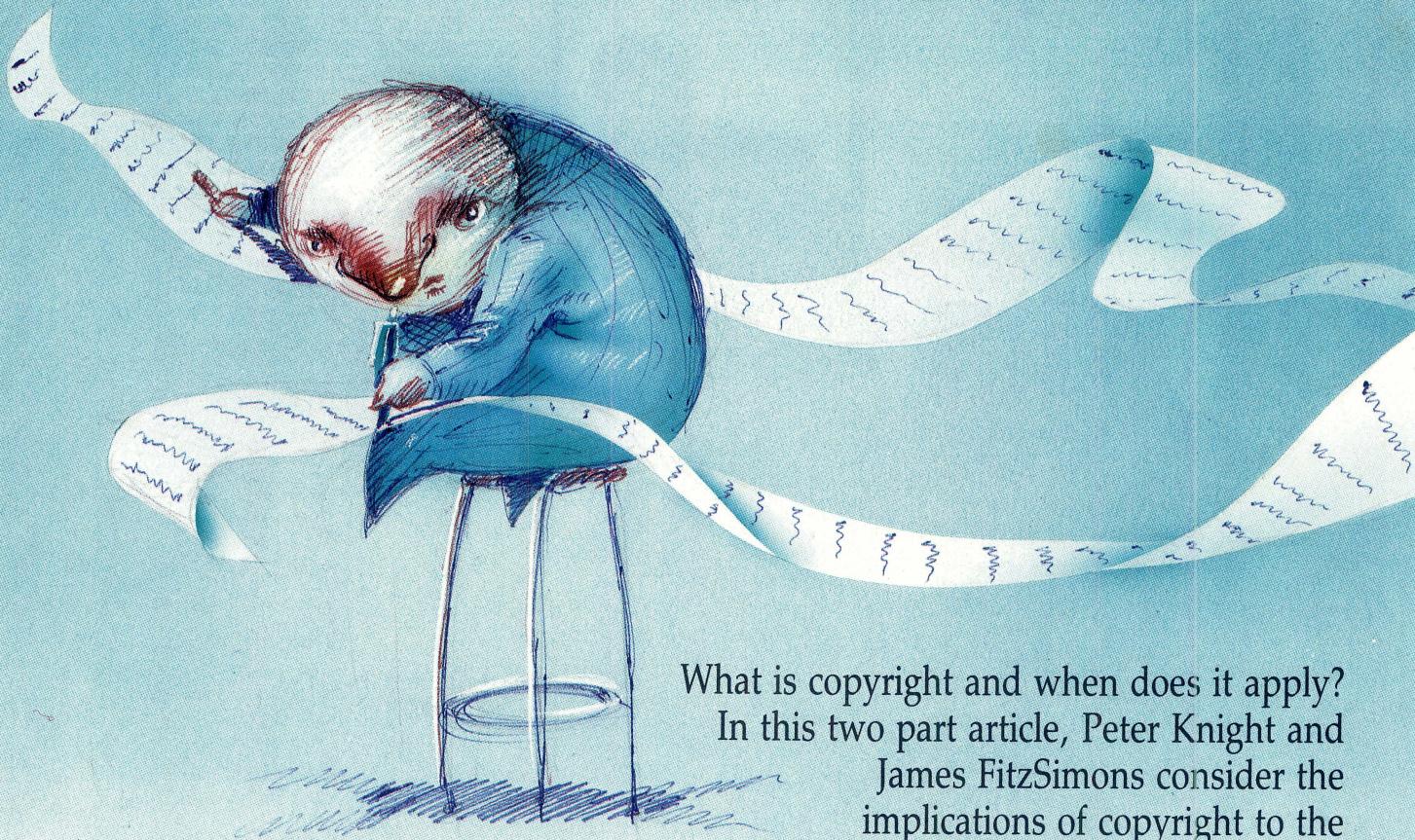
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What is copyright and when does it apply?
In this two part article, Peter Knight and
James FitzSimons consider the
implications of copyright to the
personal computer industry.

COMPUTERS AND THE LAW

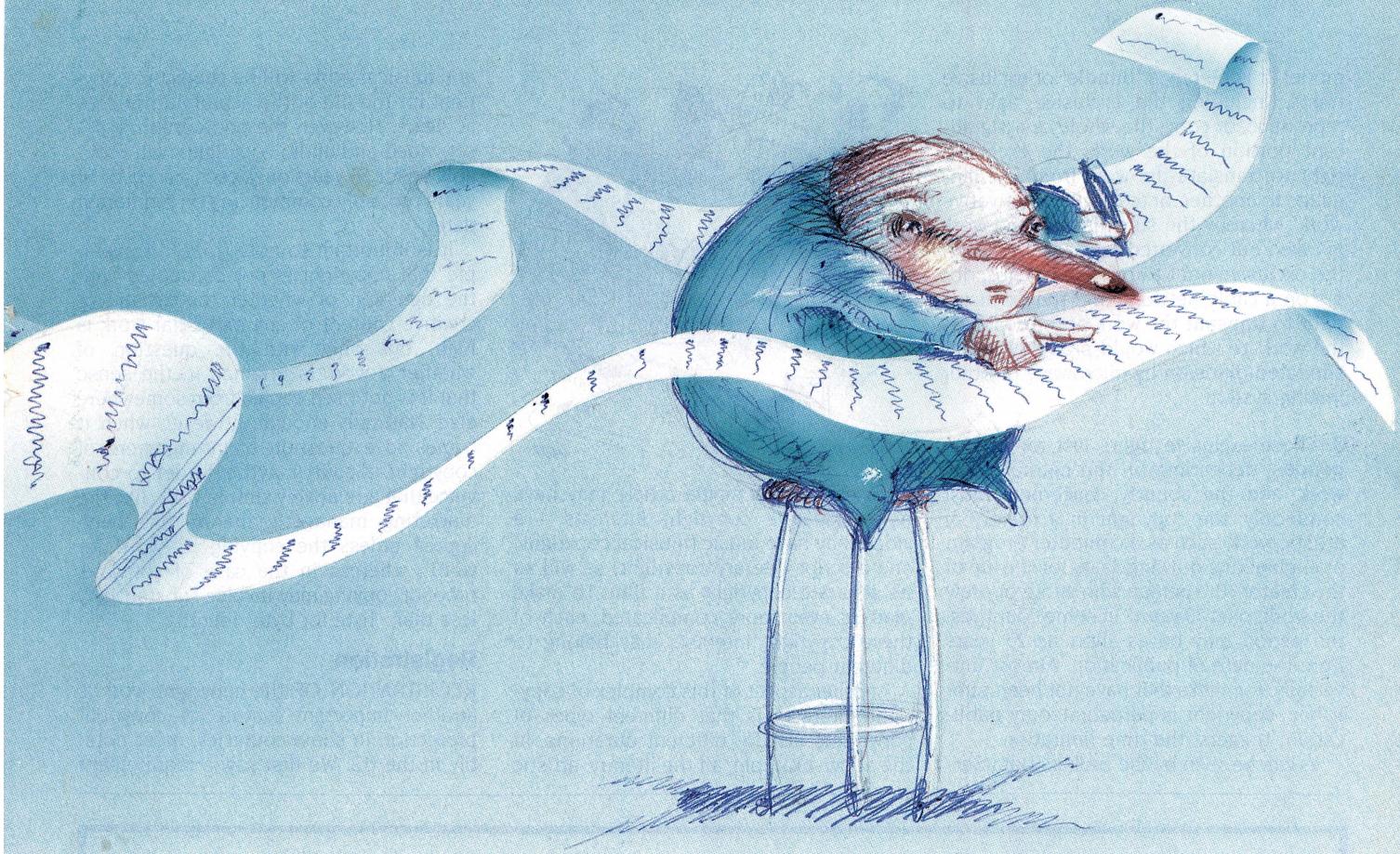
UPDATE: COPYRIGHT

THERE IS A widespread misconception that the primary function of copyright is to protect the work of artists, sculptors, musicians and authors of novels and plays, with grudging concessions to films, records, radio and television. The creative people of the computer industry, and other new

technologies, are seen by those sharing this misconception as 'carpetbaggers', unworthy opportunists in the world of garrrets, studios and galleries. History shows this view to be largely unfounded.

Copyright is a benefit granted by statute, not by the 'common law' (that is, precedents set by law cases). In England, the

source of one stream of copyright law, there was no copyright as we understand it today until 1709, when the first copyright law, the Statute of Anne, was introduced. This law related only to literary works – it was many years before music and the plastic arts were also recognised – but it was not passed for the benefit of au-



thors. The motivating force of the law was to create a registration system to protect publishers, the owners of the new technology of that time – printing presses. This set a trend that has continued throughout the history of copyright – its primary purpose has always been the protection of the exploiters of information, not its creators.

The Statute of Anne provided for a Register of works to be kept at the Stationer's office. Registration conferred approval to publish, and works which were registered could not be published by any person other than the registered publisher for a period of 25 years. The system was at that time both an instrument of censorship and a means of creating a publisher's monopoly. It is interesting to note that the Japanese copyright system followed a similar historic path.

Over time, in most countries, registration requirements have been dropped or substantially weakened, authors have become recognised as the primary owner of the right, and the term of copyright substantially extended to ensure that an author can enjoy the benefit of his or her efforts throughout life, and his or her heirs

can take advantage of that fame which appears to increase after death – usually for a period of 50 years. The main features of copyright protection were, however, established by the Statute of Anne, that is, copyright protection is an exclusive right in respect of only a limited class of acts, principally copying and publication, only for a set period of time, albeit a very long period.

In European based laws, a number of additional principles developed, called 'moral rights', which are intended to protect the integrity of the creator's work. These moral rights permit an author or artist to prevent his or her work being altered, or his or her authorship not being properly acknowledged or, sometimes, permitting the author or artist to take a cut of the price on each dealing with the work subsequent to its initial disposal.

With the increasing uniformity of copyright throughout the world, brought about by international treaties, some of these 'moral rights' have been introduced into the laws of other countries, but the fundamental links between copyright and industry remain unaltered.

The main features of modern copyright

law are as follows –

1. Copyright extends to literary, artistic and musical works, as well as to films, records, radio and television broadcasts. Varying from country to country, a number of other incidental embodiments of creative expression are also protected, such as satellite transmissions, the typesetting of pages, and performances. Protection for literary and artistic works is the most important for the computer industry. Computer programs, as well as manuals and other written materials, are the proper subject matter of the category of literary works, and masks works, PCB drawings, circuit diagrams and even case designs may be regarded as artistic and sculptural works.

2. Copyright is not a monopoly – not like a patent or registered design, or utility

This article was extracted from The Legal Environment of Computing by Peter Knight and James FitzSimons, and published by Addison-Wesley Publishing Company Australia, with the permission of the publisher. The book is available from all major technical bookstores; \$32.95 rrp.

model. It is merely a 'bundle' of exclusive rights, including the exclusive right to reproduce, or copy, the whole or a significant portion of the work; the exclusive right to translate the work from one language to another, or to create a 'derivative work' whereby the substance of the work is taken but converted into another form; the exclusive right to publish to subscribers on a cable network; and the exclusive right to transmit the work or to broadcast the work, to which would probably be assimilated diffusion by microwave or other linking system.

3. These exclusive rights last for varying periods, depending on the nature of the work, and the country concerned. Most commonly, the copyright in a literary or artistic work, such as a computer program or engineering drawing, lasts for the life of the creator (the person who wrote or drew the work) plus 50 years. In some countries, the period may be as short as 25 years from the date of publication. Almost universally, for works that have not been published, copyright is perpetual, only publication 'triggers' the time limitation.

As can be seen by the Brokers Data Ser-



vices example, a single article may have many separate copyright interests — a video may have music (musical copyright) and a script (literary copyright) as well as its separate copyright as a film. To make matters even more complicated, each of these copyright interests may belong to different people.

Another aspect of this complex of copyright interests is that different types of copyrights last for different durations. In the above example, all the literary, artistic

and musical works will be subject to copyright for the life of the actual author plus 50 years. However, the photograph, type-set, video and audio copyrights will probably be for 50 years only, each period of 50 years probably commencing on a different date.

It is important to note from this example that copyright is not concerned with the question of whether the artistic or creative content of any particular work is high, but only with the question of whether a work is original, in the sense that it is not itself copied from somewhere else. Naturally enough, however, when it comes to a question of infringement of copyright, a court may be harder to convince that a relatively simple work, like the marketing manager's memo, has been copied unless the copying is 'word for word', whereas in the case of software, proof of copying may involve substantially less than 'byte for byte' identity.

Registration

REGISTRATION OF the copyright work is another important feature of copyright protection in some countries, most notably in the US. We first saw a requirement

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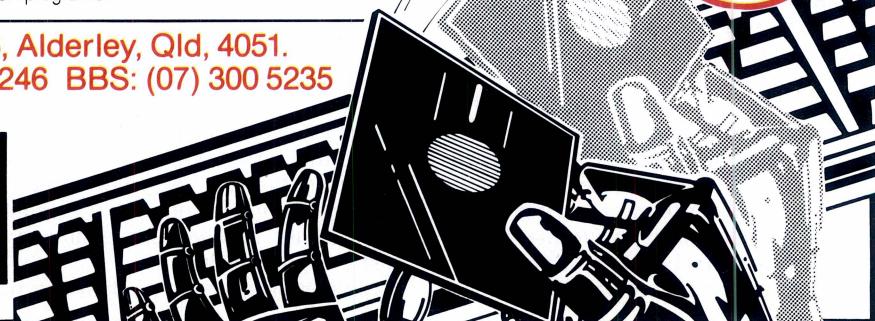
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1. It chooses a personal computer product and has the existing software recompiled, modified and rewritten to operate on this personal computer with its operating system, including a communications program to enable access to a database to be set up by the company.
2. It creates a database that can be accessed by the software with a suitable password or passwords depending upon the subscription status of the customer.
3. It has a cassette tape recording made to which new users can listen to be guided through the basics of the computer and the software (the speaker on the tape reads a scripted 'guided tour').
4. It has a manual written to show customers in more depth how to use the software, gain access to the data, and manipulate the data to the best effect.
5. It creates a loose-leaf book of selected data and information as a hard copy backup, to be updated by regular monthly releases of both hard copy and as files on diskette.
6. It engages an industrial designer to

create artwork for the packaging.

7. It engages a solicitor to create a licensed document for the software and the data, including a separate warranty registration card and software support agreement.
8. And, it engages an advertising agency to create advertising for an industry journal and a video extolling the virtues of the product and services offered for display to potential customers.

Shortly after the launch, the marketing manager writes a memo to the managing director summarising some shortcomings in the product due to the usual time and budget shortfall, and suggests an enhanced version be released in the near future. So, which of the articles created above are subject to copyright?

The answer is – all of them. The software, the database, the user manual, the loose-leaf book (and all updates separately), the license agreement, warranty registration card and software support agreement, the script for the audio 'guided tour' and the video, even the memo sent by the marketing manager, all enjoy copyright as literary works (except in some countries the software may have a limited copyright by virtue of special laws – leading to the anomaly that the manual, or the marketing manager's memo, may have a longer copyright than the software!). In addition, the audio and video have special 'sound recording' and 'cinematographic film' copyrights, the typeset and any drawings and photographs in the manual will have their own copyright and last, but not least, the artwork on the packaging will (subject to requirements in some countries of design laws) enjoy copyright.

for registration in the Statute of Anne of 1709 which required registration of the work with the Stationer's office in order to gain the protection afforded by the law.

The purpose of registration may well have been to create certainty – so that the author's work could be identified with certainty when an alleged plagiarising copy was made. As mentioned, the registration system in English legal systems had two side affects – it was policed by publishers and hence became identified with the publisher's monopoly, and it also could be used as an instrument of political censorship. As a result of these side affects, the registration system has gradually fallen out of use in 'common law' countries and registration is now unnecessary, except in the law relating to 'industrial designs'.

In the US, and also countries such as Taiwan and Canada, registration has ceased to be a prerequisite to subsistence of copyright, but can be a necessary condition of suing for infringement and/or recovering damages (as opposed to a restraining order alone). In Japan, there remain registration provisions, and the registration of an assignment of copyright may be required before the commencement of legal action by the assignee. In any event, registration is a relatively simple and inexpensive procedure, without the extensive delays and costs associated with other registration systems in patent, trademark and designs law.

One problem of the registration system which has been raised by the computer industry is the requirement that a copy of the copyright work be lodged with the

copyright office, with the consequent problem of maintaining of secrecy in source code. On the one hand, it may be argued that the source code is not published when software is released in object code form, so there should be no requirement to lodge it for registration. On the other hand, it is widely accepted that piracy of the object code amounts to reproduction of the source code, and this militates in favor of registration of the source code. At present, there is a compromise procedure adopted by countries requiring registration whereby the source code may be lodged subject to a secrecy arrangement, by which only an object code listing is available for public inspection.

The copyright notice ©

IT IS A requirement of the copyright law of the US that on each copy of a work published in that country there is displayed a 'copyright notice', that is © accompanied by the name of the copyright owner, and the year of first publication. Failure to do so will not necessarily result in loss of copyright, at least under the current law, but will disentitle the copyright owner from claiming damages. There are now special rules making an allowance for the special requirements of computer products, for example, permitting the copyright notice to be coded into a computer program so that it displays on power up, or to be placed on the outside of a silicon chip casing, or even engraved onto a silicon chip so that it will be obvious to any person interested enough in the topography of the chip to examine it that closely.

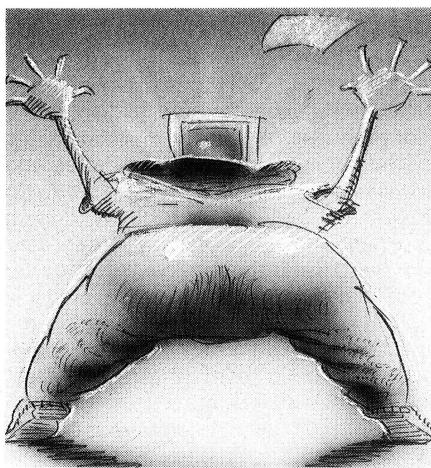
The reasons for this requirement are very good ones. It is only reasonable that a person should not be penalised for copying and publishing a work if he or she has no reason to believe that the work is not 'public domain', or has no way of knowing who the copyright owner is in order to obtain a license.

There are similar requirements in other legal systems, particularly those participating in the Universal Copyright Convention which is an international copyright reciprocity arrangement. However, English 'common law' countries and most European countries do not have such a requirement. In these countries it is argued very persuasively that in these days of high copyright awareness, it would be obvious to all but the least intelligent that a work must be the subject of copyright, and it is not too difficult to trace a work back through its supplier in order to find out

who is the owner of that copyright. For this reason, it is really incumbent on the copier to defend a copyright claim by showing that he or she did not know of the copyright claim and could not find out who was the copyright owner.

Whichever of the legal system may be preferable, or where the work is published, it is good common sense to ensure a copyright notice in some form is displayed on the work – then there can be no debate on the subject in the event of an infringement.

Publication is a critical event to copyright. The right to first publish a work, as well as being one of the exclusive rights of the copyright owner, governs the period of



the rights of the copyright owner, and the copyright itself in a particular country may depend on where, and sometimes when, a work is published.

Publication is the making available to the public of a sufficient number of copies of the work to meet reasonable demand. On the one hand, this is not the same test for 'publication' required under patent law or the law relating to trade secrets, which tend to consider publication as supply to even an individual who is free to use the information as he or she chooses. What is required is the supply of such number as may be necessary to meet reasonable demand. On the other hand, this does not mean publication in the normal commercial sense, which means large scale distribution, 'pushing' the product by advertising and marketing. In other words, it is possible to meet the requirement of publication simply by placing the work on sale to the public, without advertising, and accordingly, only requiring a small number of copies.

Adaptations, translations and derivative works

ANOTHER OF the exclusive rights of the copyright owner is to make further works based upon the original. In copyright systems based upon the English model, this is covered by a number of specific and quite narrow provisions, but the most important from our point of view is the right to make an 'adaptation', generally meaning in the context of computer programs 'a translation of the work'.

Translation is not defined at all, but prior to the decision of the High Court of Australia in the Apple case discussed below, it appeared that it was the use of this concept that overcame the difficulty of relating the object code of a computer program to its source code form, and this was certainly a view accepted by the Canadian Federal Court in the Apple case which came before it.

When any human language is translated into another, say English into German, then, as well as new arrangements of letters being substituted, the grammar, or order of words, is often changed, and even new words introduced in order to accurately translate the sense of the original, or to introduce appropriate colloquialisms. We can say the same of the object code in relation to the source code, although the difference may be more like between English and Russian than English and German.

In the US law, these problems are not posed, as the copyright is expressed in much broader terms, as the sole right to make a 'derivative work', being any work based upon and taking material from the original.

In many non-European countries, it is presently being debated whether the notion of 'translation' also extends to the modification of a program's screen displays so that the program appears to the user in local language – this is a question of particular significance in Singapore, Korea and Taiwan, and potentially in the People's Republic of China, should it introduce a copyright system. The significance of this debate lies in the fact that local copyright laws permit translation of a copyright work into the local language under certain circumstances without there being a breach of copyright, in order that works not otherwise available are usable by the people of those countries. Such provisions may have some justification in respect of printed matter, such as school textbooks, but are difficult to justify in the

case of computer programs, where the screen displays are a small part of the program, indeed really only a set of data incidental to the program itself. It is improbable that 'translation' in this sense could apply to the compilation or assembly of source code.

Charles Pascal

CHARLES PASCAL is a programmer. He is particularly interested in a PC based communications program of PC Communications Inc., which he uses regularly, and is irritated by what he regards as unclear and slow entry procedures into the application. On analysis of the programs, he decides that it makes inadequate use of the disk operating system and so he writes a short modification which fits into the place of one of the sections of the PC communications programs which significantly speeds the opening of the application and brings a clear entry screen onto the monitor on booting – it consisted of only a dozen or so lines of code.

He then sends the code to PC Communications with a letter describing the entry system and asks if it is interested in buying from him this improvement. He hears nothing further. Some time afterwards, a friend shows him a new version of the PC communications program that he has just bought. Charles sees the entry screen he had devised and on inspection of the object code, finds the code is identical to his own. In addition, he finds that a paragraph of his letter has been used in the manual to describe the new entry procedure.

There can be no doubt that PC Communications has infringed the copyright of Charles, which he enjoys in both his code and his letter, both in reproducing and publishing it. It does not matter that the code written, or the letter, was relatively insignificant or mundane – so long as it was Charles' original work. Copyright has been found to subsist in railway timetables, racing guides, pools coupons, examination papers and a host of common-place articles.

The position here would be quite different if PC Communications had seen what Charles had written, and then used that idea to create something of its own, but that it is unlikely to result in identical code, no more so than for a paragraph of PC Communication's manual to have accidentally contained an identical paragraph to that of Charles' letter.

It is an infringement of the copyright owner's statutory rights to do without his or her permission any of the things encompassed within the exclusive rights during the period of copyright in question, the most important being the right of copying, or 'reproduction'.

Reproduction – the protection of the work, not the ideas

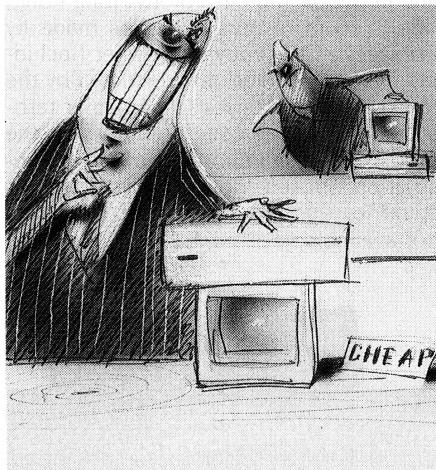
COPYRIGHT IS not concerned with 'mere ideas' in a work. Anybody can create another work using exactly the same ideas and not be in breach of copyright at all, but nobody can copy the actual words of the author.

As can be seen by the Charles Pascal example, sometimes the dividing line between what is a new work that has only taken ideas, and a 'copy' that has in fact taken original material is very blurred. This is particularly so in the case of computer programs and other technology products, such as mask works. The grey area is best illustrated by 'look and feel' cases, and cases of 'reverse engineering'.

Look and feel claims relate to the adopting by a new program of successful procedures used by a prior program belonging to someone else. In the case of screen layouts, these may qualify as 'artistic works' in their own right, but many programs involve the interaction of various elements on the screen in a particular manner, so that the screen's appearance may be quite different each time the user operates the program. In addition, the sequence of events may be an important element of the success of the program, which others will wish to emulate.

As we have seen, copyright requires something in a fixed form, and infringe-

ment involves the copying of a substantial element of that fixed form, not the ideas it expresses. Accordingly, 'look and feel' claims present a real difficulty to traditional legal concepts. There have been some successful claims in the US, such as



Jaslow v Dental Laboratories and Broderbund v Unison, although each of these cases involved some more traditional copyright elements. However, in each of these cases the courts accepted that the earlier computer program expressed a certain way of doing things, and the program was a fixed material form of that expression, so there was nothing inconsistent with traditional legal ideas in the 'look and feel' claim.

Reverse engineering presents quite different issues. It is essential to establishing infringement of copyright that the original work has been copied. In other words, if the second work only looks like the earlier by accident, there is no breach of copy-

right, as copyright is not a monopoly in the same sense as patent or design law. For this reason, in the case of a computer program or mask work, if the original work is only used to extract its ideas and to create a specification of a completely new work, then the original has not been copied at all. However, the creators of the new work must be very careful that they do not save time, money and creative effort by taking elements or solutions to problems from the earlier work, as the more they do this, the more likely it is that the later work will be an infringement after all.

Reproduction – copying a 'substantial part'

COPYRIGHT PROTECTION would be useless if the only conduct that amounted to infringement were reproduction of the entire work or slavish translation. In other words, if the pirate could avoid liability by changing or leaving out sections of the work that he or she did not need or like, then the computer industry, at least, would have no use for copyright.

For this reason, the test of infringement is one of quality, not quantity. Based upon a side by side comparison, the issue will depend upon whether what has been taken by the infringer was 'substantial' – bearing in mind that if the infringer thought that what was taken was clever enough for him or her not to wish to do it himself or herself, then it is more than likely that it is 'substantial'. A small fraction of the original work may be sufficient in appropriate cases.

It is plain from the Beta Computers example that visual works such as drawings for casings, semiconductor chip masks and printed circuit board layouts must

Beta Computers

BETA COMPUTERS Inc., produces many computers and a full range of peripheral devices including disk and tape drives of its own design. Effective Peripherals Inc., produces large capacity disk and tape drives and sees a market for selling its drives into the Beta computers user base and in competition with Beta selling its own drives. To do this, Effective obtained an interface board from a Beta customer, which included a small ROM based program, and logic diagrams and certain other information from service manuals published by Beta to its OEMs service organisations and distributors without effective limitation. For use with its own

drives, Effective reorganised the interface board and rewrote 75 per cent of the code in the ROM based program to adjust for Effective's slightly different storage procedure, but was able to use the remainder because to rewrite it would have involved a substantial design change in the product – the routines in the program were shuffled about. The result was an Effective drive transparent to the Beta computer and much cheaper. Needless to say, the logic diagram for the Effective interface board issued to its distributors and service organisations was very similar to the Beta circuit for its part.

Notwithstanding the fact that Effective

rewrote a great deal of the program, and reorganised the remainder, there has been a breach of Beta's copyright because what was kept was clearly substantial, and it is irrelevant that it is reorganised. There has also been infringement of the logic diagram, as there is a clear link between the work of Beta which was taken by Effective. Again, the case would have been quite a deal more difficult if Effective had not used the Beta components to design their own, but designed their logic and their code 'from scratch' – but then the design effort may have been so protracted and costly that Effective's product may not have been competitive.

qualify as 'artistic works' to enjoy copyright.

In US copyright law, however, a useful three dimensional object cannot enjoy copyright as such, and so it cannot be a 'copy' of the drawings made for it. So, if one computer manufacturer copies the casing of another, that would not be a breach of copyright, as copying even a small part of the manual for it would be. It is less clear whether a useful article which remains two dimensional, like a layer of a semiconductor chip, or a PCB, is affected by the same limitation. These articles, for example, are made by a process so similar to silk screen printing or photogravure, that it is not immediately apparent why they should be excluded from copyright protection simply because they serve a utilitarian purpose.

In English copyright systems, there has not until recently, been any such difficulty in the articles being of an industrial nature. There have been many cases which confirm this. Recent examples in decided cases include the making of three dimensional articles from drawings for parts of a hot water system, an exhaust pipe for a motor car, an electric kettle, the working parts of pumps and various toys. The only genuine difficulties in English legal systems have arisen from the test for infringement by reproduction, that the three dimensional article appears the same as the drawing to an untrained observer, and questions raised by the possible application of the law of industrial designs.

However, recent trends have swung sharply away from this liberal extension of copyright to useful articles, and laws limiting the use of copyright in this way, or at least full copyright lasting for the life of the designer plus 50 years, has been introduced in the United Kingdom and elsewhere.

Secondary infringement – importation and distribution

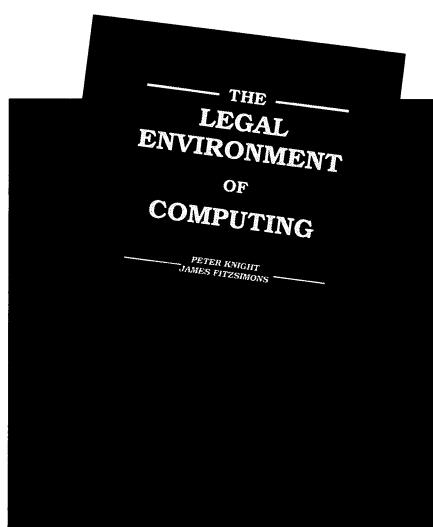
A FURTHER aspect of infringement is certain 'secondary' rights of the copyright owner.

A copyright owner is entitled to prevent any person importing, selling, distributing, displaying or otherwise dealing in 'infringing copies' of the work. Infringing copies refers to copies of the work made without the permission of the copyright owner.

The practical importance of these powers in support of the copyright owner is immediately obvious. Copyright protection would be worthless if one could prevent unauthorised copying within a coun-

try, but not prevent cheap illegal copies coming into the country from overseas.

In some countries, this protection even extends to the preventing of the importation of legitimate copies of the work, in other words 'parallel importation' or 'grey marketing'. This is so in Australia and New Zealand, but not in Japan or the US, and in the UK (and its colony Hong Kong) this is so in respect of copies made by licensees of the copyright owner (including related corporations) restricted by the terms of their licenses to particular territories outside the country into which the product is being imported – a very odd restriction indeed. Regrettably, in most countries this development of the law is not available.



The Legal Environment of Computing is a must for all computer users.

The significance of these rights will not be lost on those who must expend considerable sums of money promoting a product in a small market (all of which moneys must be recovered in the price of goods sold or licensed), facing loss of that market to parallel imports from a cheaper market, which take advantage of that expenditure without having to recover it.

This type of protection is unique to copyright owners, who are exempted from the provisions of relevant anti-trust laws, as other intellectual property rights, even when similarly exempted (such as patents), do not always extend protection against parallel imports of goods.

Although publishers of computer programs would like to control use of computer programs and do their best with their licenses, it is still not usually re-

garded infringement of copyright to use a computer program. Subject to the licence contract, any person can purchase and use the program on his or her own computer regardless of where it was intended to be used.

However, if computer programs in an object code enjoy copyright, it is a most significant fact that computer programs on disk or tape (such as most application software and operating systems for all computers from micros to mainframes) operate by means of reproduction in whole or in part in the temporary memory of the computer. Accordingly, copyright would put in the power of the copyright owner the power to control use of the program other than by contract – a very important consideration in, say, limiting users to certain types of computers, or in limiting the number of terminals in certain types of terminal networks. Being aware of this possibility, some of the more recent amendments to the copyright law have specifically qualified the definition of 'reproduction' so that it does not encompass normal use.

The most important consequence of this aspect of copyright law is the growing rental market, and the provision of bureau services.

When copyright was mainly concerned with books, the issue of rental and lending was mainly concerned with the rights of public libraries, but the video industry, and now the software industry, have shown how valuable the rental business is, and there is no obvious reason why copyright owners should not take a share of this further exploitation of their creative efforts.

Of course, the existing law already prohibits as primary and secondary infringement the making and dealing with (including rental) of illegal copies, but there is no limit, other than in any valid licence, in most countries to the rental of legitimate copies, or their use in a bureau service. Japan is an interesting exception to this observation, and there are proposals in many countries to modify their copyright laws in the same fashion. In those countries which have chosen to place computer programs in a separate copyright category, great care must be taken to ensure that computer programs are not overlooked in this area. □

Next month, in the second part of this article, the authors consider remedies available to the copyright owner when their copyright has been infringed.

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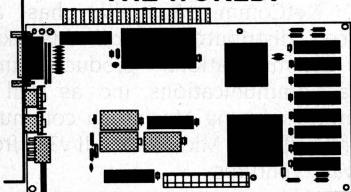
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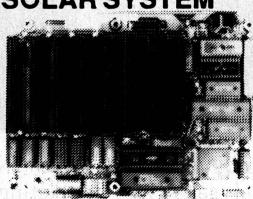
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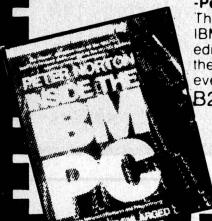
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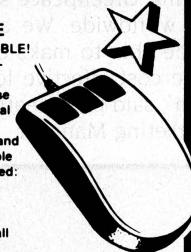
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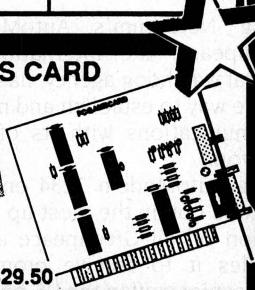
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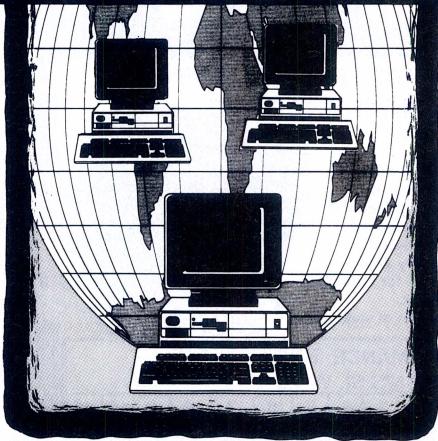
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NEW CONNECTIONS



Greenpeace online

Using NetComm's AutoModem 1234, Greenpeace, the international environmental watchdog agency, has found an effective way to establish and maintain data communications with its offices around the world.

The AutoModem 1234 enables Greenpeace to obtain the most up to date information on all Greenpeace activities and enables it to receive prompt feedback from senior staff in the US on proposals to protect Australia's environment.

Greenpeace sends news and other messages from around the world to its members and news services. When nuclear submarines dock in Australian waters, Greenpeace members around the world want to know about it and of the daring demonstrations staged by colleagues.

Finding an economical means of trans-

mitting information is of utmost importance to an organisation that depends on donations for funding its operations. With every cent counting, Greenpeace (Australia) was delighted to receive an AutoModem 1234 from NetComm.

Greenpeace's mission in Australia is to raise public awareness of ecological disasters and lobby government within a local and international context. According to Armin Wittfoth, Greenpeace's information officer, the organisation needs to keep in constant communication with its headquarters in Amsterdam as well as with offices in the United States.

'Greenpeace offices all over the world communicate via electronic mail. Here in Australia we relay all out information to Greenpeace's e-mail base in Boston. This is now accessed via GreenLink, Greenpeace's exclusive e-mail information service. There is a constant flow of information out of the Sydney office. Our personnel need to report on all activities and of course be kept up to date on international events,' he said.

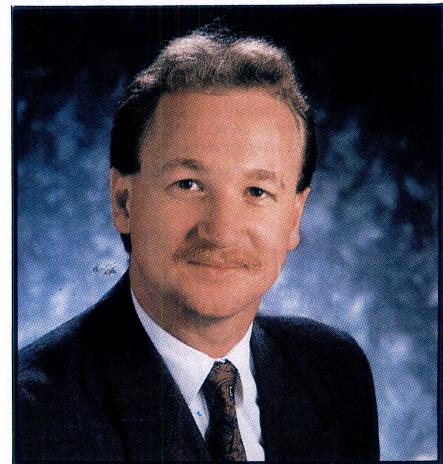
'We've been using the AutoModem for three months, and it has overhauled our communications system. Operating at 24-00bps, the AutoModem transmits data at twice the speed of the previous system, thus significantly reducing our retransmission costs,' said Wittfoth.

'The AutoModem plays just a small part in facilitating Greenpeace's environmental efforts worldwide. We are more than happy to be able to make data transmissions more cost effective for the Australian branch', said Paul Heath, NetComm's Group Marketing Manager.



NetComm acquires Dayna distributorship

Leading data communications manufacturer, NetComm (Australia) has announced distributorship of networking and communications products from Dayna Communications, Inc. as well as the award winning Macintosh communications software, MicroPhone II v3.0, from Software Ventures.



According to Paul Heath, NetComm's national sales and marketing manager, the strengths of the products from Dayna Communications and Software Ventures complement NetComm's current range of communications and networking products.

Fiber optic LAN for Defence Department

The Department of Defence is to install a multimillion dollar network built on 100 megabits-per-second fiber optic technology. The Fiber Distributed Data Interface or FDDI is said to perform the same roles as Ethernet and Token Ring and will link to both.

The first installation of 16km of optical cable is being tested, and will eventually link more than 300 workstations. Telecom's faster network Fastpac will be commercially available next year, offering 140 Mbits per second, but until then the DOD installation will be the fastest in Australia.

- Newsbytes

NetWare 386

Novell has introduced and demonstrated a new line of products built on the NetWare 386 Communications Services platform to provide LAN to host connectivity and extended network management capabilities.

Novell introduced NetWare 386 Services for SAA communications software supporting IBM's Systems Applications Architecture and providing connectivity between NetWare networks and IBM minis and mainframes including the System/370 and AS/400.

Four complementary products were also introduced including two graphics-based 3270 terminal emulation software products for Microsoft Windows 3.0-based workstations and the Macintosh, an updated version of the DOS-based 3270 terminal emulation client software and a comprehensive network management product for centralized communication control and integrated support for IBM's NetView enterprise management system.

In other news from Novell, the company has also announced key third-party support for NetWare 386 Communications Services. Six new third-party products built on the NetWare 386 have been announced. To facilitate product development on the NetWare 386 Communications Services platform, Novell also announced the NetWare 386 Communications Services Developers' Kit, the company's newest set of application software development tools.

– Newsbytes

'We stated earlier in the year that we intended to broaden our third party interests especially in the Macintosh arena, and set about putting the appropriate support facilities in place,' said Heath.

'These agreements firmly reinforce third party principals' faith in NetComm's ability to provide value-added distribution for their products in the Australian market. We plan to provide these new products from Dayna Communications and Software Ventures with the same superior level of support and service already afforded to our other principals,' said Heath.

Key Products covered by the new agreements include DaynaNet, an OEM version of Novell's NetWare tailored for the needs of the Macintosh network market, DaynaFile – an external hardware device allowing a Macintosh to support a 5.25-inch Dos-compatible high-density disk drive, and Dos Mounter – a software product providing the same function for 3.5 inch Dos disks using the superdrive built into the newer Macs.

Other products include DaynaMail, an e-mail program that offers both local and wide-area communications. It provides users with tools to send, organise, review and track correspondence between Macintosh and IBM-compatible computers on the same DaynaNet or NetWare network, providing flexible inter-office communications.

DaynaTalk is a product which enhances the data transmission rate of LocalTalk compatible cable systems, increasing productivity on heavily used networks, or the addition of computers before performance deteriorates. Dayna Ether Print is a new product soon to be released that provides a simple solution to printing from a computer on an Ethernet system to any LocalTalk network printer.

An enhanced version of the award winning Macintosh communications software program, MicroPhone II v3.0 includes new features such as the ability to extend MicroPhone's language using external HyperCard commands and functions, the ability to support international character sets with Roman-based languages for handling international transmissions, and optical password protection.

Sourceware announces Windowlink

Digital Communications Associates (DCA) has announced Windowlink Version 1.2 software for use with DCA's Irma hardware for micro-to-mainframe communications in the Microsoft Windows environment. DCA's IrmaLan products are distributed in Australia by Sourceware, one of this country's leading distributors of microcomputer software and hardware add-on products.

According to Bob Schippers, communications product manager for Sourceware, the release of Windowlink 1.2 is a further sign of DCA's confidence in the Windows environment. 'DCA's public position is that the Microsoft Windows operating system will be playing an ever-increasing role

in desktop computing,' he says.

Windowlink for Irma version 1.2 includes several features developed from requests by Windowlink and Irma users. With Windowlink for Irma Version 1.2,

Last link in Pacific Rim network

OTC, Australia's international carrier, has signed an agreement with AT&T of the US and Kokusai Den Shin Denwa (KDD) of Japan to complete a telecommunications network circling the Pacific Rim through a link from Guam to Japan. Agreements to date have established timetables for cables from Japan to mainland US, then on to Hawaii, New Zealand, Australia and Guam.

OTC began planning for the Pacific Rim network in 1986 when it formulated the Pacific Cable Plan which involved the links from Hawaii to Guam. General manager of technology at OTC, Maurie O'Connor, said, 'The Pacific Rim circuit has enormous implications for the users of telecommunications facilities to or from Australia. The new loop will make it possible to send TV and other wide band services by cable.'

Australian industry is set to supply a large proportion of the cabling. Already, Australian companies have been contracted to supply all the cable for the link from Australia to New Zealand. Australian industry is also positioned well to supply up to 70 per cent of the cabling for the links from Hawaii to New Zealand and Australia to Guam, according to O'Connor.

'This would mean a total of almost US\$500M, and represents by far the largest share of any supplying nation for the high capacity loop,' O'Connor said. 'As an initiator of the loop network of submarine optical fibre cables around the Pacific Rim and a leading member of the group of investor countries in the region, Australia is at the forefront of the technology involved in this leading edge telecommunications enterprise,' O'Connor went on to say.

– Newsbytes

users don't have to memorize lengthy command sequences to invoke a file transfer through the MS Dos-Executive window.

Version 1.2 now includes pull-down menu support for IBM's 3270 File Transfer mainframe software (IND\$FILE), which allows users to initiate a file transfer by pointing and clicking with a mouse from within the Windowlink terminal emulation window. Also, this latest Version supports IBM's 3270 coaxial adapter boards as well as DCA's Irma hardware, featuring automatic software configuration so users no longer have to replace existing 3270 communications hardware.

Windowlink for Irma version 1.2 offers IBM 3191 terminal keyboard emulation as well as Irma's standard 3270 keyboard emulation. Other features include an automated, menu-driven installation feature, as well as full screen, non-scrolling support for Mods 2, 3, 4 and 5 using unique DCA-supplied display fonts.

The new fonts allow users to see the desired information within a single maximised window (or screen) in an easy-to-read format, eliminating the need for scroll bars to advance through the emulation screen.

According to Schippers, Windowlink for Irma version 1.2 is sure to prove popular with Irma's existing user base in Australia. 'We can expect further developments for DCA's range of Windows-based products in the 3270 environment for standalone workstations connected via coaxial cable and SDLC,' he said.

'In the Local Area Network (LAN) market, they are looking at software solutions for products like 10Net, IrmaLan and Select Communications Server.'

Crosstalk MK.4 version 2.0

Digital Communications Associates (DCA) has announced a new version of its Crosstalk Mk.4 communications software, featuring a variety of new interfaces, extensive help features and increased support for 3270 communications. DCA's IrmaLan products are distributed in Australia by Sourceware, one of this country's leading distributors of microcomputer software and hardware add-on products.

Bob Schippers, communications product manager for Sourceware, said the ability to choose from several different interfaces made it easier to access the powerful features of Crosstalk Mk.4. 'The

added capabilities give users easy access to IBM mainframes in both the synchronous and asynchronous environments, while allowing background operation so users can automate communications without dedicating the personal computer,' he said.

Crosstalk Mk.4 Version 2.0 provides users with a choice of three interfaces: a new built-in directory interface, the traditional Crosstalk XVI user interface, and the Crosstalk Mk.4 Version 1.1 menu and command-driven interface. Because Crosstalk Mk.4 Version 2.0 includes the familiar Crosstalk XVI interface, users of that product can easily learn to use Crosstalk Mk.4.

The new dialing directory interface enables users to create customised lists of dial-in services, such as CompuServe and Dow Jones/New Retrieval Service. Services are selected by simply pointing with the arrow key and pressing the return key to select the required host. The directory lists names, host descriptions and other information about the services which users can access with arrow keys. Other keys used to add or remove services are listed on the screen.

Users can also customise the directory's on-screen presentation according to personal preference. For example, a user can change the order of services listed or sort them alphabetically by name. Users may also display connection information or call statistics, such as time of day and date.

The latest version of Crosstalk Mk.4 includes a detailed context-sensitive help feature and on-line manual as well as on-screen command prompts. It also provides new enhancements for IBM 3270 terminal emulation. Because it supports the IBM 3270 adapter as well as the FTTERM specification - personal computer software that provides a high quality 3270 'look and feel' through asynchronous IBM protocol converters - users can communicate with IBM mainframes both asynchronously and synchronously.

According to Schippers, Version 2.0 further increases the communications options for users communicating with an IBM mainframe in both synchronous and asynchronous environments. 'A business traveler can access an IBM mainframe using DCA's Irma or IBM's 3270 adaptor while in the office. Then, when traveling, he can access the mainframe via a modem using Crosstalk Mk.4,' he said. 'Crosstalk

THE NEWEST MODEMS in NetComm's already extensive line-up are the SmartModem and AutoModem 1234E, and the PacketModem range. The new SmartModem and AutoModem are similar to the other products in the respective ranges, with the addition of the MNP-4 error-correcting protocol. Offering 300, 1200, 1200/75 and 2400bps speeds asynchronous (the SmartModem 1234E also offers synchronous communications), the modems are capable of communicating with dial-up services which support these speeds. Both the CCITT and Bell tones are supported.

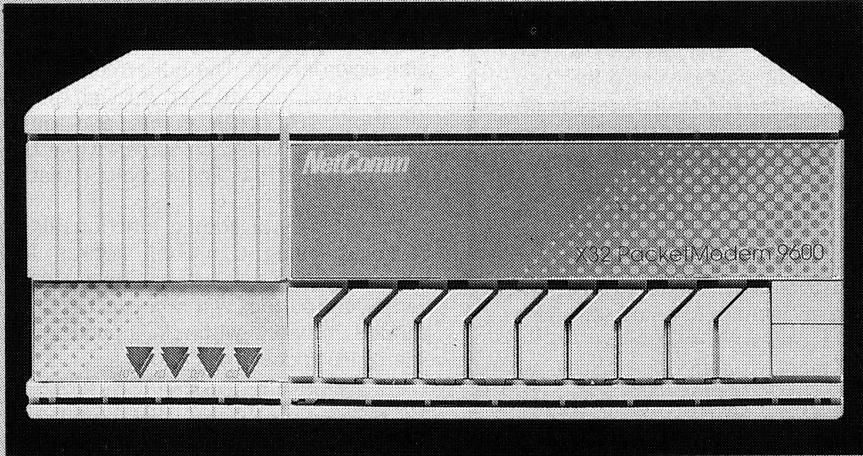
The addition of MNP-4 means that, when the modem is communicating with another similarly-equipped modem at the other end of the link, automatic error correction is applied to the link. MNP-4 does not induce any overhead on clean lines, since the protocol uses a synchronous link between the modems, which does not use start and stop bits. This means that MNP-4 communications is actually about 20% faster than asynchronous communications at the same speed. The link between the computer and modem is still asynchronous, however.

In order to take advantage of this speed increase, the terminal port on the modem has to be operated at a higher speed than the line speed, and the 1234E modems can support terminal speeds at up to 9600 baud. The best way to operate these modems is to put the modem into constant-speed mode, and disable speed detection in the communications program running on the computer.

Of course, if you don't have some form of handshaking operating between the computer and the modem, then it is easy to send data to the modem too fast for the modem to squirt it down the line - a problem known as *overrun*. To avoid this, it is important to enable handshaking both within the modem (using a special AT command), and the communications

Mk.4 Version 2.0 also supports the IND\$FILE file transfer protocol when used with DCA's Irma, the IBM 3270 adapter, FTTERM or Tymnet/T78, allowing users to transfer files to IBM mainframes in either the asynchronous or synchronous environments. 'Crosstalk Mk.4 version 2.0 is distributed by Sourceware, on (02) 427 7999, and is priced at \$377. Upgrades and conversions from Crosstalk Mk.4 Version 1.1 are available from Sourceware's Customer Support Division, for \$160.

New NetComm modems



program. Hardware handshaking is generally preferable, and means that you can no longer get away with a 3- or 4-wire cable between the computer and modem. The handshaking lines have always been there, but with MNP and constant speed interfaces, it is important that they be used to gain the maximum advantage of the protocol, while avoiding the loss of any characters.

The S-register complement has also been improved over that of previous NetComm models, allowing control over parameters such as DTMF (tone-dial) tone lengths – great for dialling into busy radio stations to enter a competition. The line interface of the modems is also more intelligent than before, with dial tone and, ringing and busy tone detection.

The NetComm PacketModem range is even more interesting, allowing direct access to packet-switching networks such as Austpac. There are two modems in this range – with maximum speeds of either 2400 or 9600bps, although the latter will be of little use on Austpac until such time as V.32 dial-in is supported.

The PacketModems differ from ordinary modems in that they also have a

PAD (packet assembler-disassembler) in the same box. The advantage of this over a normal 1200 or 2400bps modem is that the error correction provided by X.25 extends all the way to your site, rather than stopping at the Austpac PAD. The latter configuration leaves the link between your modem and Austpac open to errors.

The PacketModems include all of the usual modem features, such auto-dial, auto-answer and auto-ranging, and, like the new 1234E models, includes MNP-4 error-correction, and a constant-speed terminal interface.

The NetComm PacketModem range places the full power of packet-switching networks such as Telecom's Austpac and OTC Dialcom at your fingertips. While they can be used as standard modems, it's a rather expensive way to get a modem. It is designed for users who have a need for X.25 on-site, but cannot justify the cost of a direct leased line. Using a PacketModem also allows multiple sessions to take place over the same physical line, if the software supports this.

For more information, contact NetComm, on (02) 888 5533, fax (02) 805 0254.

PC/Focus 5.5

Focus Technologies has released PC/Focus 5.5, the first in a series of product announcements this quarter which it claims will have a major impact on the use of PCs for mainframe/host application development. PC/Focus is a comprehensive application development and decision support environment for DOS, OS/2 and all major LANS.

According to Focus Technologies, the new version offers PC users access to the most powerful fourth generation language (4GL) and database management system. 'PC/Focus 5.5 provides PC users with a developmental tool for all hardware platforms and operating systems,' said Mark Fletcher, General Manager of Focus Technologies.

'Users quite literally have access to an enterprise-wide information management solution that is portable across VAX,

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3Com simplifies access

3Com Corporation has announced two products for 3+Open networks, a directory service and a menu interface, which it says will add value to LAN Manager networks by providing easier access to a broader range of applications. The directory service incorporates features to ease administration of large networks while increasing network dependability. It is based on ISO and CCITT X.500 conventions for network naming.

3+Open Menus will provide an intelligent workstation menu interface to simplify users' interaction on multivendor networks. With 3+Open, users can access the applications or information they need without knowledge of network configuration or physical location of the applications.

William Messer, 3Com's general manager, Asia Operations, says, 'The directory and menu services enhance the value of our customers' network systems by ensuring access to multivendor applications and resources around the world. Automatic loading of applications from 3+Open Menus will save time and reduce network complexity for LAN managers.'

Messer says 3+Open Directory distributes information between the

most efficient and appropriate network resources, but appears to the user as a single repository for such data as names and addresses. The directory service automatically synchronizes directory updates across the network, giving users access to consistent information. Replication of data on multiple servers across the global network gives users uninterrupted access to directory information, even if there is a problem on a particular network segment.

The menu system offers access to resources on multivendor networks, including 3+, 3+Open, Novell Netware and others, simply by selecting items from the menu. It displays only those options available to the user at a particular workstation. An incorporated editor makes it possible to create custom menus, using a system of prompts at each design step. This enables the network administrator to configure specific menus for each user.

3Com says 3+Open Directory and 3+Open Menus will be available by spring. 3+Open Directory is compatible with 3+Open 1.1 and LAN Manager 2.0 and runs on OS/2 servers.

- Newsbytes

Unix, Hewlett-Packard NPE/XL, Tandem, AS/400, VM and MVS hosts.'

The new product features a number of major enhancements including Direct/Connect for PC-to-mainframe co-operative processing. Direct/Connect enables PC applications real-time access to all major databases, including Focus, DB2, SQL/DS, IMS, IDMS and VSAM.

PC/Focus 5.5 also offers a newly developed user interface, enhanced transaction processing language and an add-on local area networking option that includes a full-function database management system server for DOS-based LANs.

Fletcher said the PC-based system provides database management, reporting, development, business graphics and communications facilities fully compatible with the Focus systems currently available for most workstation, midrange and mainframe platforms. 'Focus offers a total computing solution - even in a PC environment - providing database man-

agement, PC-host connectivity and 'true' fourth generation language application development. All applications and data are portable across the range of operating systems,' he said.

'We've made a quantum leap in enhancing the look and feel of PC/Focus,' Fletcher said. 'We're delivering a huge amount of functionality with PC/Focus, and the new front-end menuing system organises that functionality very well, making it easier for anyone to start working right away.'

The newly developed interface for PC/Focus 5.5 utilises pull-down menus and character-based windows to make the full range of Focus functionality available to even first-time users. Data maintenance functions have been extended with Release 5.5. New features simplify the application development process, ensure application portability and aid in downsizing host Focus applications. Structured programming capa-

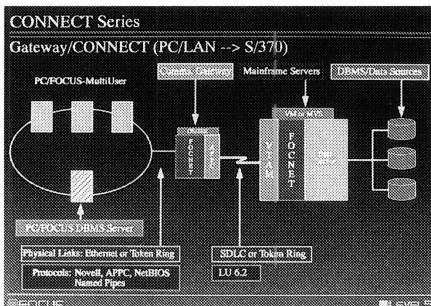
bilities, multi-record processing and large application support facilities have also been improved.

A new, integrated application debugger provides a true source-level debugging environment. The full screen display allows developers to step through an application, set break points and query data values visually on screen while displaying the actual Focus syntax that is executing.

The process of adding functionality to PC/Focus using C, Cobol, Fortran and Basic language routines has been simplified. Such routines can now execute in expanded memory without impacting the size of PC/Focus applications.

Co-operative processing with PC/Focus 5.5 is available to any IBM compatible PC, ranging from the entry-level 8088 to the powerful 80486 machine. The package requires a hard disk, DOS 2.0 or later, 640K of RAM and any IBM or Irmacompatible card with a coax connection to the mainframe.

No additional PC connectivity or emulation software is needed. Direct/



CONNECT utilises the LU 2 communication protocol to interact with the mainframe server and is incorporated at no additional cost into PC/Focus 5.5. PC/Focus 5.5 is priced from \$2375 for the single user version and from \$2950 for the LANpak supporting up to 32 users.

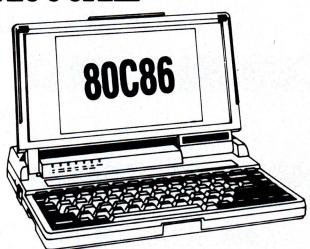
The Lanpak supports Novell Netware 2.0 or later, IBM PC LAN Program, IBM LAN Server 1.0 or later, 3Com 3Plus Open 1.1 or later, Ungermann-Bass Net/One and Banyan Vines 4.0 or later.

Focus Technologies is the Australian subsidiary of the US software developer Information Builders Inc. The Melbourne based company distributes the Focus fourth generation language and LEVEL5 'rule' - based expert system product lines in Australia and New Zealand. For more information, contact Focus Technologies, on (03) 525 2099, or fax (03) 521 2797. □

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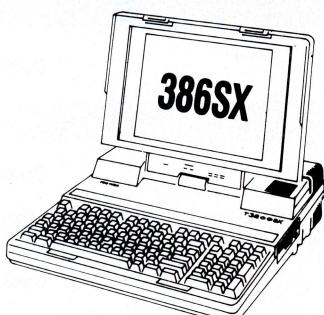


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THE PROPHET



LARRY
LEWIS

DURING A SPATE of recent illness, I was given a book to browse by Kangaroo Press – it may interest the computer buffs, those who are interested in numbers and those who indulge in another money waster: gambling. Me – review a book on gambling? I even refuse to buy raffle tickets! Any time I have worked out the odds of winning, the numbers just seems to be pretty sad.

Anyway, the book starts by reviewing the history of gambling in Australia and how the government found an instant money spinner. Did you know that the 'average' payout from a \$100 investment on the four legged poker machines is about \$85? That means you get back \$85 for 'investing' \$100 – that's right you lose \$15.

Poker machines have better odds for the 'investor' than horse races. Why anyone would consider themselves an investor when gambling is beyond me!

There are a number of hints relating to odds and how some manage to manipulate the outcome. The most interesting is the commission rooms where the elite gamblers are able to have the edge on the poor bloke on the street.

All of the 'you will always lose' information is backed up by enough mathematics to keep a cray warm for weeks at a time. The author was a teacher of science and languages and accepted a wager (good start hey?) to become a teacher in mathematics. Just to show even he could get it wrong, he was also a first grade Rugby League referee – his name – Hans Eisler.

The book is good reading if you're into gambling or just number crunching odds. It's titled *A guide to better odds gambling into the nineties* and is published by Kangaroo Press, PO Box 75, Kenthurst 2156 NSW. Most bookstores should be able to order a copy which costs \$15.

The listings

IT LOOKS LIKE I have to say it again – the listings produced here are supplied by the BBS Registry. I do not alter, amend, fold, spindle or otherwise change the information that is provided for publication. You must remember that the lists published are always behind the electronic 'online' ones because of the time necessary to produce the magazine.

The National BBS Registry coordinator, Rodney Creer, has advised that there has been an amendment to the rules used to run the Registry. Section 6 has been re-written to allow the Registry coordinators the ability to refuse listing a system. This has become necessary because of the increasing number of systems that are unsavory (to say the least). However, it does not mean that the Registry will start being an arbiter on what is acceptable to be a BBS. If it were possible, the coordinators would prefer not to need to have this clause. The new Section 6 states: 'Except for genuine offline situations, no system is to be removed from the listings without the authority of the national coordinator. So far as possible, the Registry is not to become involved in issues relating to the conduct of a system by its operator.'

However, as it would appear that the relevant authorities are not prepared to take action against systems that are clearly un-

The BBS

seemly, the Registry will refuse to list systems which degrade its aims.

Generally, a regional coordinator will advise the national coordinator that a board should be listed as 'listing rejected'. This can be for a new or existing listing and no reason need be provided to the operator (to prevent legal action, the only answer should be that the system is not suitable for inclusion). Any person who believes that a system should not be listed may submit a request to the regional and/or national coordinator. It is not required that the operator be advised of any investigation, but he/she should be advised if the listing is to be removed.

Complete BBS Registry Listing

WE PUBLISH THE COMPLETE listing for the ACT and New South Wales in July, October, January and April; the listing for Victoria, Tasmania and the Northern Territory in August, November, February and May; and South Australia, Western Australia and Queensland in September, December, June and March.

Registration of Bulletin Boards are only accepted electronically at the primary electronic collection points – please address all enquiries through them.

If a system is refused listing, it should be noted so in the next release update information and listings. After that, the listing should not be published (unless the rejection is canceled).

It is not intended that the Registry become a court to assess the relevant worth of systems. A complete list of unacceptable behavior will not be contemplated, however, a system will be liable to have their listing rejected if they promote software piracy (theft), conduct their system in such a manner that breaches the Telecommunications Act, or in any other way maintains their board in such a way that listing of the board degrades the standing of the Registry. Continual and trivial changes to listings or abuse of registry coordinators will also be considered a reason for rejection of a listing.

An operator whose system has had a listing rejected may appeal to the Registry founder to review the matter, and such reviews will be at the discretion of the Registry founder. A copy of the full policy document is available from all Registry pickup points.

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collection points

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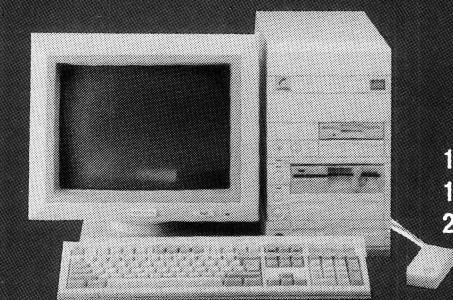
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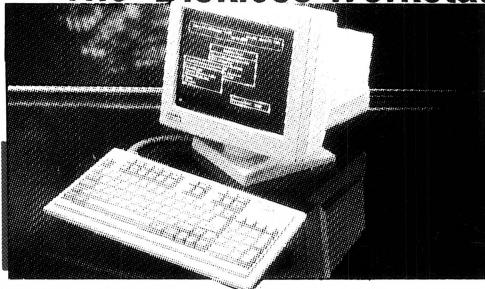
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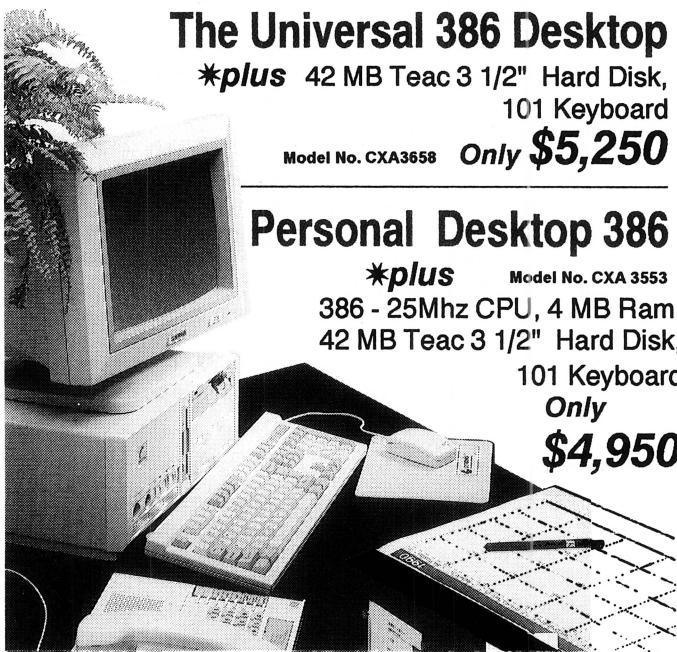
*plus 42 MB Teac 3 1/2" Hard Disk,
101 Keyboard

Model No. CXA3658 Only \$5,250

Personal Desktop 386

*plus Model No. CXA 3553
386 - 25Mhz CPU, 4 MB Ram,
42 MB Teac 3 1/2" Hard Disk,
101 Keyboard

Only
\$4,950



* Standard Features

- * CPU 80386 - 33Mhz,
- * 32KB Cache Memory, 4 MB Ram,
- * 1.2 and 1.44MB Floppy Disk Drives,
- * 2 Serial and 1 Parallel Port,
- * VGA Colour Monitor,
- * MS DOS 4.01 and GW Basic

NATIONAL BBS LISTING

SA – Oracle PC-Network
(08) 260 6222

WA – 1990 Multiline
(09) 370 3333

Tas. – Hobart Users Bulletin Board (002) 435 041

BBS Listing 9006

Mon 4 Jun 1990

New systems: 24
Online: 15
Unknown: 1
Temporarily Offline: 2
Permanently Offline: 6
Name Change: 11
Amended: 39
Total Systems: 446

VICTORIA

4-DOS

Sysop: Peter Hayes
Phone: (052) 41-2076
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM AT Clone
DOS: MS DOS
BBSsoftware: Opus

A & C Land

Sysop: Stephen Walsh
Phone: (053) 42-0807
Baud: V21 V22 V22bis V23 B103 B212
Access: Public
Computer: Amiga 2000
DOS: AmigaDOS
BBSsoftware: Tag BBS
Note: Enter a '0' for NEW account-sEnter a '?' for menus

Advance BBS

Sysop: Lex O'Connor
Phone: (03) 585-0284
FIDOnet: 3.636/201
Baud: V21 V22 V22bis
Access: Public
Computer: IBM XT Clone
DOS: PC DOS
BBSsoftware: Opus

AIM - A)cess In Melbourne

Sysop: David Hellwege
Phone: (03) 592-3338
FIDOnet: 3.634/380
Baud: V22bis HST
Access: Public
Computer: IBM AT Clone
DOS: MS DOS
BBSsoftware: PCBoard

AmigaLink

Sysop: Bohdan Ferens
Phone: (03) 792-3918
FIDOnet: 3.633/324
Baud: V21 V22 V22bis V23
Access: Mem LVA

BBSSoftware: Opus

AmigaLink II

Sysop: Gary Gajic
Phone: (03) 376-6385
Baud: V21 V22 V22bis V23
Access: Mem LVA
Computer: IBM XT
DOS: MS DOS
BBSSoftware: Opus

AMNET

Sysop: Peter Hallgarten
Phone: (03) 366-7055
FIDOnet: 3.635/502
Baud: V21 V22 V22bis V23
Access: Mem Reg VA
Computer: Pulsar 386
DOS: PC DOS
BBSSoftware: Opus

Andy's BBS

Sysop: Andrew Gulovsen
Phone: (03) 359-6378
FIDOnet: 3.635/503
Baud: V21 V22 V22bis V23 V32
Access: Public

Antarctic Crystal

Sysop: Greg Jones
Phone: (059) 68-5885
Baud: V22 V22bis V23
Access: Public
Computer: IBM AT Clone
DOS: PC DOS
BBSSoftware: Opus

Antimatter BBS

Sysop: The Quasarman
Phone: (03) 754-3080
Baud: V21 V22 V22bis
Access: Public
Hours: Daily: 2300-1700
Computer: IBM AT Clone
DOS: MS DOS
BBSSoftware: RemoteAccess

Arcadia Opus

Sysop: Andrew Newbury
Phone: (03) 867-8793
FIDOnet: 3.634/385
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT Clone
DOS: MS DOS
BBSSoftware: Opus

AUSOM Macboard

Sysop: Ross Sheehy
Phone: (03) 587-4360
Baud: V21 V22 V22bis V23 V32 B103 B212
Computer: Macintosh
DOS: HFS
BBSSoftware: Red Ryder Host

Austech BBS

Sysop: Lucas Lozo
Phone: (03) 894-2155
Baud: V21 V22 V22bis V23 V32
Access: Public
Computer: Atari ST
DOS: TOS

BBSSoftware: Mitctron

AutoShop BBS

Sysop: The Mechanic
Phone: (03) 720-6415
FIDOnet: 3.636/501
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT Clone
DOS: MS DOS
BBSSoftware: Opus

Axiom BBS

Sysop: Andrew Rajcher
Phone: (03) 509-4417
FIDOnet: 3.634/388
Baud: V21 V22 V22bis V23 V32 PEP
Access: Reg LVA
Computer: Saffire AT
DOS: MS DOS
BBSSoftware: Opus

Ballarat C.A.E.

Sysop: Thoshan Ruberu
Phone: (053) 33-9285
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT
DOS: PC DOS
BBSSoftware: Opus

Big Tedd's Bulletin Board

Sysop: Rob Bates
Phone: (03) 509-6067
FIDOnet: 3.634/381
Baud: V21 V22 V22bis V23
Access: Reg LVA
Computer: IBM XT Clone
BBSSoftware: Opus

Bimboola Central Bulletin Board

Sysop: Steve Collins
Phone: (053) 89-1111
Baud: V21 V22 V22bis V23 B103 B212
Access: Reg
Computer: Micro-Science 286
DOS: MS DOS
BBSSoftware: Wildcat

Bits & Bytes

Sysop: Linda Brown
Phone: (059) 81-2186
FIDOnet: 3.632/999
Baud: V22 V22bis
Access: Mem LVA
Computer: XT Turbo
DOS: PC DOS
BBSSoftware: Wildcat

Brainstorm Oz!

Sysop: Rowan Stevens
Phone: (03) 758-7086
FIDOnet: 3.632/305
Baud: V21 V22 V22bis V23 B103 B212
Computer: IBM XT
DOS: MS DOS
BBSSoftware: Opus

Club Amiga

Sysop: Robert Canavan
Phone: (03) 743-1957
FIDOnet: 3.633/376
Baud: V21 V22 V22bis V23
Access: Public

BBSSoftware: RemoteAccess

Comedy Company

Sysop: Face & Pixi
Phone: (03) 872-3738
Baud: V21 V22 V22bis V23
Access: Public
Computer: XT Clone
DOS: MS DOS
BBSSoftware: Opus

Comet BBS

Sysop: Mark Dods
Phone: (03) 879-0108
FIDOnet: 3.633/377
Baud: V21 V22 V22bis V23
Access: Public
BBSSoftware: QuickBBS

Compusoft BBS

Sysop: George Tsoukas
Phone: (03) 386-6019
Baud: V21 V22 V22bis V23
Access: Mem Reg LVA
Computer: Mitac 386
DOS: MS DOS
BBSSoftware: Opus

Conundrum BBS

Sysop: The Riddler
Phone: (03) 331-0138
Baud: V21 V22 V22bis V23
Access: Public
BBSSoftware: QuickBBS

Custom Programming BBS

Sysop: Alan Williamson
Phone: (03) 848-3331
FIDOnet: 3.632/340
Baud: V22 V22bis HST
Access: Public
Computer: IBM AT Clone
DOS: PC Dos
BBSSoftware: PCBoard

Cybertech

Sysop: Spectral Image
Phone: (059) 85-5574
Baud: V21 V22 V22bis V23
Access: Public
Hours: Weekdays: 2200 - 1800
Computer: XT Clone
BBSSoftware: Opus

dBoard

Sysop: John Kewley
Phone: (03) 525-6252
FIDOnet: 3.636/315
Baud: V21 V22 V23
Access: Mem Reg VA
Computer: IBM AT Clone
DOS: PC DOS
BBSSoftware: IBBS

Dr Blaze

Sysop: Ron Lyth
Phone: (03) 890-9323
FIDOnet: 3.634/384
Baud: V21 V22 V22bis
Access: Public
Computer: IBM AT Clone
BBSSoftware: Maximus

Eastcom Opus CBCS

Sysop: Keith Haslam
Phone: (03) 808-0775
FIDOnet: 3.632/312

NATIONAL BBS LISTING

Baud: V21 V22 V22bis
Access: Public
Computer: Eastcom 386/20C
DOS: PC DOS
BBSSoftware: Opus

Eastern Plains BBS

Sysop: Martin Taylor
Phone: (051) 76-1125
FIDOnet: 3:632/311
Baud: V22 V22bis B212
Access: Mem
Computer: IBM AT Clone
DOS: MS DOS
BBSSoftware: Searchlight

Eastern Suburb Eighty User Group

Sysop: Martin Axford
Phone: (03) 819-5179
FIDOnet: 3:632/347
Baud: V21 V22 V22bis V23
Access: Public
Computer: Ultra AT
DOS: DOS

Phone: (054) 41-6054
FIDOnet: 3:635/504
Baud: V21 V22 V22bis V23
Access: Public
Computer: Pulsar 386/25
DOS: MS DOS
BBSSoftware: RemoteAccess

Hitchhikers Guide to the Galaxy

Sysop: Zaphod Beeblebrox
Phone: (03) 546-3038
Baud: V21 V22 V22bis V23
Access: Public
Hours: Daily: 0700 - 2300
BBSSoftware: RemoteAccess

Icehouse BBS
Sysop: Barbara Linton
Phone: (03) 720-3261
FIDOnet: 3:636/500
Baud: V22 V22bis B103 B212
Access: Public
Computer: IBM 386 Clone
DOS: MS DOS
BBSSoftware: Opus

MACE
Sysop: Ron Cork
Phone: (03) 764-1185
Baud: V21 V22 V22bis V23
Access: Mem Reg VA
Computer: Atari ST
DOS: Atari TOS
BBSSoftware: Michtron

Melbourne Data Exchange

Sysop: Trevor McKerchar
Phone: (03) 596-8022
Baud: V22 V22bis V23
Access: Public
Computer: IBM 386 Clone
DOS: PC MOS
BBSSoftware: Wildcat

Melbourne Fort Interest Group

Sysop: Lance Collins
Phone: (03) 809-1787
Baud: V21 V22 V22bis V23
Access: Mem VA
Computer: IBM XT Clone
DOS: MS DOS
BBSSoftware: PCBoard

Melbourne Novell User Group

Sysop: Chris Stegner
Phone: (03) 523-0482
FIDOnet: 3:634/383
Baud: V21 V22 V22bis V23
Access: Public
Computer: Ipx 286/C
DOS: MS DOS/Novell
BBSSoftware: TBBS

Melbourne PC Users Group BBS

Sysop: Colin Macauley
Phone: (03) 696-2760
FIDOnet: 3:632/309
Baud: V21 V22 V22bis V23
Access: Mem LVA
Computer: Wyse 386
BBSSoftware: Maximus

Metamorphosis CBCS

Sysop: Laserblade
Phone: (03) 560-2659
Baud: V22 V22bis
Access: Public
Hours: 2100 - 0800 Daily
BBSSoftware: Opus

Micom CBCS

Sysop: Peter Jetson
Phone: (03) 758-8642
FIDOnet: 3:633/371
Baud: V21 V22 V22bis V23
Access: Mem Reg
Computer: IBM Clone
DOS: MS DOS
BBSSoftware: Opus

Jeff's Amiga Board

Sysop: Jeff Stevenson
Phone: (051) 277-135
Baud: V21 V22 V22bis V23
Access: Mem Reg VA
Computer: Amiga 2000
DOS: Amiga DOS
BBSSoftware: Tag

Little Shop of Horrors
Sysop: John Marsden
Phone: (03) 583-4778
FIDOnet: 3:633/364
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT
DOS: MS DOS
BBSSoftware: RemoteAccess

Narnia

Sysop: Lord Aslan
Phone: (059) 83-2046

Baud: V21 V22 V22bis
Access: Public
Hours: Daily: 2300 - 0700 Weekdays: 1600 - 1730
Computer: XT Clone
DOS: MS DOS
BBSSoftware: QuickBBS

Nemesis BBS

Sysop: Amphion & Riddler
Phone: (03) 331-1155
Baud: V21 V22 V22bis V23
Access: Public
BBSSoftware: Major BBS
Note: 8 lines available on this number!

Neptune

Sysop: TML
Phone: (03) 758-9573
FIDOnet: 3:633/374
Baud: V21 V22 V22bis
Access: Public
BBSSoftware: RemoteAccess

Nightmare BBS

Sysop: Superboy, Handyman and Razor
Phone: (03) 560-7386
Baud: V21 V22 V22bis V23
Access: Public
BBSSoftware: RemoteAccess

Nitroland

Sysop: Nitro
Phone: (054) 41-6515
Baud: V21 V22 V22bis V23
Access: Mem VA
Computer: Commodore PC
DOS: MS DOS
BBSSoftware: Wildcat

Niveous

Sysop: Rupert Russell
Phone: (053) 33-2170
Baud: V21 V22 V22bis V23 V23ORG B103 B212
Access: Public

Metamorphosis CBCS
Sysop: Laserblade
Phone: (03) 560-2659
Baud: V22 V22bis
Access: Public
Hours: 2100 - 0800 Daily
BBSSoftware: Opus

Micom CBCS
Sysop: Peter Jetson
Phone: (03) 758-8642
FIDOnet: 3:633/371
Baud: V21 V22 V22bis V23
Access: Mem Reg
Computer: IBM Clone
DOS: MS DOS
BBSSoftware: QuickBBS

Nuclear Confusion BBS

Sysop: Paul Johnson
Phone: (03) 822-2919
Baud: V21 V22 V22bis V23
Access: Public
BBSSoftware: Red Ryder Host

Omega BBS/Vortex Host

Sysop: Mark Gregson
Phone: (052) 23-1671
Baud: V21 V22 V22bis V23 B103 B212
Access: Public
Computer: MicroDOS 386
DOS: Xenix
BBSSoftware: Xenix BBS

Orion

Sysop: Phoenix
Phone: (03) 568-0835
Baud: V21 V22 V22bis
Access: Public
Computer: IBM AT
DOS: MS DOS
BBSSoftware: Searchlight

Did you know that the 'average' payout from a \$100 investment on the four legged poker machines is about \$85?

BBSSoftware: Opus

EasyAccess
Sysop: Garry Gillard
Phone: (03) 585-0495
FIDOnet: 3:636/200
Baud: V22 V22bis V32
Access: Public
Computer: IBM 386
DOS: MS DOS
BBSSoftware: Wildcat

Green Griffon Inn

Sysop: The Obsidian
Phone: (03) 460-1128
FIDOnet: 3:633/202
Baud: V21 V22 V22bis V23
Access: Public
Hours: Daily: 2200 - 0630
Computer: IBM XT
DOS: MS DOS
BBSSoftware: RemoteAccess

Heritage OZ

Sysop: Kevin Slattery
Phone: (03) 435-9934
FIDOnet: 3:633/372
Baud: V21 V22 V22bis
Access: Public
Computer: AT Clone
DOS: MS DOS
BBSSoftware: Maximus

High Voltage
Sysop: Scott & Denise Fraser

Interleave-Microscience BBS

Sysop: Greg Furlong
Phone: (03) 562-8373
FIDOnet: 3:633/361
Baud: V21 V22 V22bis
Access: Public
BBSSoftware: Opus

Island BBS

Sysop: Ross Skinner
Phone: (03) 742-3993
Baud: V21 V22 V22bis V23
Access: Mem VA
Computer: IBM XT Clone
DOS: MS DOS
BBSSoftware: QuickBBS

Jeff's Amiga Board

Sysop: Jeff Stevenson
Phone: (051) 277-135
Baud: V21 V22 V22bis V23
Access: Mem Reg VA
Computer: Amiga 2000
DOS: Amiga DOS
BBSSoftware: Tag

Little Shop of Horrors

Sysop: John Marsden
Phone: (03) 583-4778
FIDOnet: 3:633/364
Baud: V21 V22 V22bis V23
Access: Public
Computer: Micronica 386
DOS: Amiga XT
BBSSoftware: RemoteAccess

Millenium BBS

Sysop: Max Headroom & Fred Frog
Phone: (03) 720-6816
FIDOnet: 3:636/310
Baud: V21 V22 V22bis V32
Access: Public
Computer: Micronica 386
DOS: Amiga XT
BBSSoftware: RemoteAccess

Narnia

Sysop: Lord Aslan
Phone: (059) 83-2046

NATIONAL BBS LISTING

Outer East BBS

Sysop: Ross Sargent
Phone: (03) 736-1181
FIDOnet: 3:633/373
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT Clone
DOS: MS Dos
BBSsoftware: Opus

PC Connection IBBS

Sysop: Lloyd Borrett
Phone: (03) 388-0909
FIDOnet: 3:632/330
Baud: V21 V22 V22bis V23
Access: Reg LVA
Computer: NEC Powermate 386/16
DOS: PC DOS
BBSsoftware: The Major BBS
Note: Additional 4 lines: (03) 388-0133V22 V22bis V32

Peninsula Colour Computer Club

BBS
Sysop: Stan Blazejewski
Phone: (03) 580-4605
Baud: V21
Access: Reg LVA
Hours: Daily: 2130 - 0700
Computer: Tandy CoCo 1
BBSsoftware: Colorama

Personal Computer Support Group

Sysop: David Woodberry & Bob Stafford
Phone: (03) 563-9102
FIDOnet: 3:632/349
Baud: V21 V22 V22bis V23
Access: Mem Reg VA
Computer: IBM XT Clone
DOS: MS DOS
BBSsoftware: Opus

Phase V

Sysop: Psycho Felix
Phone: (03) 803-6976
Baud: V21 V22 V22bis V23
Access: Public
BBSSoftware: RemoteAccess

Rastar

Sysop: Alf
Phone: (03) 369-2403
Baud: V21 V22 V22bis V23
Access: Reg VA
Computer: IBM AT Clone
DOS: PC DOS
BBSSoftware: WWIV

Ratz BBS

Sysop: Howard Alexander
Phone: (03) 563-8117
FIDOnet: 3:633/301
Baud: V22 V22bis B103
Access: Mem Reg VA
Computer: Amiga 2000
DOS: Amiga DOS
BBSSoftware: Paragon

RBBS of Melbourne

Sysop: David Gaze
Phone: (03) 794-9754
Baud: V21 V22 V22bis V23
Access: Public
DOS: MS DOS

BBSoftware: RBBS-PC

Redback BBS

Sysop: Shalamar
Phone: (058) 21-8273
Baud: V21 V22 V22bis V23
Access: Mem Reg LVA
Hours: Weekdays: 2200 - 0600
Weekends: 2100 - 0600
Computer: Amiga 1000
DOS: AmigaDOS
BBSSoftware: BBS-PC!

Sam's Opus BBS

Sysop: Alan Haslar
Phone: (03) 563-1117
Baud: V21 V22 V22bis V23
Access: Public
BBSSoftware: Opus

SMART BBS

Sysop: Richard Hoskin
Phone: (03) 602-1336
FIDOnet: 3:632/302
Baud: V21 V22 V22bis PEP
Access: Public
Computer: ALR 386
DOS: PC DOS
BBSSoftware: Opus

Southern Mail

Sysop: Maurie Halkier
Phone: (03) 725-1621
FIDOnet: 3:633/320
Baud: V22 V22bis PEP
Access: Public
Computer: Eastcom 386/25
DOS: PC MOS
BBSSoftware: Maximus

Swinestud

Sysop: Craig Silva
Phone: (03) 818-6389
FIDOnet: 3:633/363
Baud: V21 V22 V22bis V23
Access: Reg VA
Computer: IBM XT Clone
DOS: MS DOS
BBSSoftware: QuickBBS/Opus

Tardis II

Sysop: Malcolm Miles
Phone: (03) 859-3109
Baud: V21 V22 V22bis V23
Access: Public
Computer: PC
DOS: Concurrent DOS
BBSSoftware: CALLME/GOLIATH

The Amiga Limits

Sysop: Magnus Magnanimous
Phone: (03) 725-2895
Baud: V21 V22 V22bis V23
Access: Reg VA
Computer: IBM AT
DOS: PC DOS
BBSSoftware: RemoteAccess

The Bear Essentials

Sysop: Paul Ridley & Jenny Moloney
Phone: (03) 877-7333
FIDOnet: 3:633/365
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM AT Clone
DOS: MS DOS

BBSoftware: RemoteAccess

The Brick Centre

Sysop: Elaine Ralph
Phone: (03) 761-1468
FIDOnet: 3:633/201
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM AT Clone
DOS: MS DOS
BBSSoftware: QuickBBS

The Cafe

Sysop: Cefiar Channadranac
Phone: (03) 894-2815
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM AT Clone
BBSSoftware: TBBS

The CatHouse DownUnder

Sysop: John Princen
Phone: (03) 875-8215
Baud: V22 V22bis
Access: Public

BBSoftware: Red Ryder Host

The Hot-Line

Sysop: Mark Firus & Darren King
Phone: (03) 547-5117
Baud: V22 V22bis B103 B212
Access: Reg LVA
Computer: IBM XT Clone
DOS: MS DOS
BBSSoftware: Opus

The Image BBS

Sysop: Garry Stuart & Nigel Newby
Phone: (03) 720-1259
Baud: V21 V22 V22bis V23
Access: Public
Computer: Image 386
DOS: PC DOS
BBSSoftware: Opus

The Last Frontier

Sysop: Alternate One
Phone: (03) 885-9110
Baud: V22 V22bis
Access: Public

Why anyone would consider themselves an investor when gambling is beyond me!

Computer: Ultra AT

DOS: PC DOS
BBSSoftware: Wildcat

The Crossover

Sysop: Stephen Paddon
Phone: (03) 364-1282
Baud: V21 V22 V22bis V23
Computer: IBM AT
BBSSoftware: QuickBBS

The Fourth Dimension BBS

Sysop: Galvatron
Phone: (03) 560-9292
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT Turbo
DOS: MS DOS
BBSSoftware: QuickBBS

The Further Regions QuickBBS

Sysop: The Outsider
Phone: (03) 725-1923
Baud: V21 V22 V22bis V23 B103 B212
Access: Public
Computer: IBM AT
DOS: PC DOS
BBSSoftware: RemoteAccess

The Great MacHouse

Sysop: Matthew Simpson
Phone: (03) 561-6942
Baud: V22 V22bis V23
Access: Public
Computer: Macintosh
DOS: HFS

BBSoftware: QuickBBS

Sysop: Captain Kirk
Phone: (03) 725-6650
Baud: V21 V22 V22bis V23
Access: Reg VA
Computer: IBM AT
DOS: PC DOS
BBSSoftware: Opus

The Pirate's Cove

Sysop: Scott Enwright & The Marauder
Phone: (03) 596-1589
FIDOnet: 3:634 386
Baud: V21 V22 V22bis V23
Access: Public
Computer: NEC Powermate 386
DOS: MS DOS
BBSSoftware: Lynx

The Real Connection

Sysop: The Real Article & Deep Image
Phone: (03) 808-0810
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT Clone
DOS: DoubleDOS
BBSSoftware: RemoteAccess
Note: Second Line: (03) 808-0331

The Roaring Rapids

Sysop: Greg Holloway
Phone: (03) 877-2609
FIDOnet: 3:633/203

NATIONAL BBS LISTING

Baud: V21 V22 V22bis V23
Access: Public
Computer: Epson PCe
DOS: MS DOS
BBSSoftware: RemoteAccess

The Round Table

Sysop: King Arthur
Phone: (03) 807-1632
FIDOnet: 3.633/102
Baud: V21 V22 V22bis
Access: Public
BBSSoftware: QuickBBS
Note: 300 baud (V21) available 0000 - 1200daily ONLY!

The Seven Seas

Sysop: Warfish
Phone: (03) 49-1367
Baud: V21 V22 V22bis V23
Access: Public
BBSSoftware: QuickBBS

The Software Bank

Sysop: Simon Walsh
Phone: (03) 816-9439
FIDOnet: 3.632/301
Baud: V22 V22bis B103 B212 PEP
Access: Reg LVA
Computer: IBM 386/20
DOS: PC DOS
BBSSoftware: Opus

The Thin Red Line

Sysop: Dale Robinson
Phone: (03) 311-7317
FIDOnet: 3.636/316
Baud: V21 V22 V22bis V23 V23ORG
Access: Public
Computer: Atari PC 3
DOS: MS DOS
BBSSoftware: Opus

The Ultimate Illusion

Sysop: Simon Gronow
Phone: (03) 589-4713
FIDOnet: 3.632/998
Baud: V21 V22 V22bis V23 V32
Access: Public
Computer: XT Turbo
DOS: PC DOS
BBSSoftware: Opus

The Underground

Sysop: Moz
Phone: (03) 840-1565
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT Clone
DOS: PC DOS
BBSSoftware: DLX
Note: 4 Lines available on the above numberMembers only between 2000 - 0000

The Wastelands

Sysop: Colin Berg
Phone: (03) 309-4047
FIDOnet: 3.635/501
Baud: V22 V22bis
Access: Reg LVA
Computer: Pulsar 386
DOS: MS DOS
BBSSoftware: RemoteAccess

The Witch's Brew

Sysop: Erika Matlen
Phone: (03) 718-2198
FIDOnet: 3.633/370
Baud: V21 V22 V22bis V23 B103 B212
Access: Mem VA
Computer: IBM XT
DOS: PC DOS
BBSSoftware: QuickBBS

Thunderdome BBS

Sysop: Ian Mason
Phone: (03) 338-0739
FIDOnet: 3.635/506
Baud: V21 V22 V22bis
Access: Public
Computer: IBM XT Turbo
DOS: MS DOS
BBSSoftware: RemoteAccess

Timescape

Sysop: Yuen Ho
Phone: (03) 561-5217
FIDOnet: 3.633/375
Baud: V21 V22 V22bis V23 B103 B212
Access: Public
Computer: AT Clone
DOS: MS DOS
BBSSoftware: RemoteAccess

Valicomm Opus

Sysop: Bill Walker
Phone: (051) 27-2572
FIDOnet: 3.632/350
Baud: V21 V22 V22bis V32 HST
Access: Public
Computer: IBM 386 Clone
DOS: MS DOS
BBSSoftware: RemoteAccess

VicFlex BBS

Sysop: Peter Tawse
Phone: (03) 563-9135
Baud: V22 V22bis
Access: Mem Reg LVA
BBSSoftware: Wildcat

Wescom

Sysop: The Grand Admiral
Phone: (03) 521-2192
Baud: V21 V22 V22bis V23
Access: Public
Computer: IBM XT Clone
DOS: MS DOS
BBSSoftware: RemoteAccess

Yarra Valley BBS

Sysop: Frank Conner
Phone: (059) 64-3126
Baud: V21 V22 V22bis V23 B103 B212
Access: Public
Computer: C-128
BBSSoftware: EBBS 128

Zim's BBS

Sysop: Graeme Zimmer
Phone: (051) 431-671
FIDOnet: 3.632 352
Baud: V21 V22 V22bis V23
Access: Public
BBSSoftware: Opus

Zoist

Sysop: Bob Fletcher

Phone: (03) 467-7984
Baud: V21 V22 V22bis B103 B212 HST
Access: Public
Computer: IBM 386 Clone
DOS: MS DOS
BBSSoftware: RemoteAccess

Tassie DataBase

Sysop: Roy Austen
Phone: (003) 44-9762
FIDOnet: 3.670/301
Baud: V21 V22 V22bis V23 V32 B103 B212
Access: Reg VA

It is not intended that the Registry become a court to assess the relevant worth of systems.

TASMANIA

CephaCom..

Sysop: Roy Austen
Phone: (003) 44-5855
FIDOnet: 3.670 304
Baud: V21 V22 V22bis V23
Access: Reg VA

Computer: IBM XT Clone

DOS: MS DOS

BBSSoftware: RemoteAccess

NORTHERN TERRITORY

ACCENT! Amiga BBS

Sysop: Greg Smith
Phone: (089) 53-2090
FIDOnet: 3.690/645
Baud: V21 V22 V22bis V23 B103 B212
Access: Mem Reg VA

Computer: Commodore PC10 III

DOS: MS DOS

BBSSoftware: QuickBBS

Amiga Retreat

Sysop: Mark Keogh
Phone: (089) 45-1516

FIDOnet: 3.690/648

Baud: V21 V22 V22bis

Access: Public

Computer: IBM XT Clone

DOS: MS DOS

BBSSoftware: Opus

Diversion BBS

Sysop: Trevor Hopps
Phone: (089) 45-2246
FIDOnet: 3.690/642
Baud: V21 V22 V22bis V23 B103 B212

Access: Public

Computer: IBM XT Clone

DOS: MS DOS

BBSSoftware: Opus

OPUS THETA

Sysop: Paul Malkinson
Phone: (089) 87-1011
FIDOnet: 3.640/100
Baud: V21 V22 V22bis V23 B103 B212
Access: Reg VA

Hours: Weekdays: 1900 - 0900

Weekends: 24 Hours

Computer: Samsung XT

DOS: MS DOS

BBSSoftware: Opus

Dakomm Pty. Ltd trading as
George's Computer Store

FAX OR PHONE US NOW FOR PROMPT
 QUOTATION ON ALL YOUR COMPUTER
 SOFTWARE AND HARDWARE
 REQUIREMENTS
 PH:(02) 264 9188 FAX: (02) 264 7852



EPSON AX2 20MB

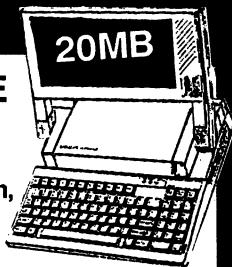
This 12MHz 286 computer features:

- 640K RAM
- 1.2MB FDD
- 20MB hard disk
- 101 Keyboard
- MS-DOS
- FREE on site warranty

Mono Graphic card Samsung Monitor	\$1995
EGA card & Philips EGA Monitor	\$2650
VGA card and Philips VGA Monitor	\$2750

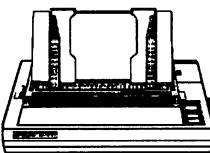
EPSON PC PORTABLE

Epson Laptop with:
 Full size keyboard and
 numberpad, 3.5" Floppy disk drive,
 20MB Hard disk, Back lit LCDScreen,
 Batery Mains 100-250 volts



\$1995

EPSON PRINTER LQ-400/500

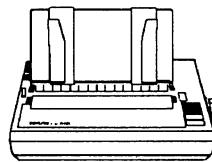


80 Column 24 pin Letter Quality dot matrix printer with single & tractor feeder. Free printer cable & paper.

\$539

EPSON PRINTER LX-400

Amazing value 9 pin Epson Dot Matrix printer with single and tractor feed functions. Comes with free printer cable



SALE \$299

ACCOUNTING

Sage Bookkeeper.....	\$279
Sage Accountant.....	\$595
Sage Accountant Plus.....	call
Sage Financial Controller.....	\$1050
Sage Job Costing.....	\$495
Sage Payroll.....	\$495
Sage IPoS point of Sale.....	\$795
Exogen 1.....	\$1795
Exogen 2.....	\$3495
Attache 5.....	call

COMMUNICATIONS

Carbon copy Plus.....	call
Deeklink.....	call

DATABASE

dBase iv.....	\$795
Paradox 3.0	\$825
Paradox Pal-edit.....	call
Paradox Engine.....	call
Mastering Paradox with ease....call	
Reflex 2.0.....	\$325
Clipper Computer.....	call
Tracker Plus v.....	call
Tracker II.....	call

DESK TOP PUBLISHING

First Publisher.....	call
Ventura Publisher 2.0.....	call
Ventura Pro Extension.....	call
Soft Kicker for Ventura.....	\$149
Omnipage 386.....	\$1995
Pagemaker 3.0.....	call

WORD PROCESSING

Wordstar 6.0.....	\$399
Word Perfect 5.1.....	\$539
Word Perfect Library.....	call
Lotus Manuscript.....	\$669
MS Word.....	\$469
MS Word for Windows.....	\$519
Grammatik 4.....	call

CAD

CCS Designer.....	call
Autosketch.....	\$219

GRAPHICS

Corel Draw.....	call
Paintbrush.....	call
Publishers Paintbrush.....	\$395
Autosketch.....	\$219
Autodesk animator.....	\$349
Lotus Freelance Plus.....	call
Lotus Graphwriter.....	call
Drawperfect.....	\$219

LANGUAGE

Turbo C ++.....	\$325
Turbo Professional 2.0.....	call
Turbo Pascal 5.5.....	call
Turbo Pascal Pro 5.5.....	call
Norton Editor.....	\$95

PROJECT MANAGEMENT

Harvard Project Manager.....	call
Timeline.....	\$675

TRAINING

Dos Tutorial.....	call
Ventutor.....	call
Mastering Paradox with ease....call	

MICROSOFT

MS windows 3.0.....	\$179
Excel for Windows.....	\$569
MS Word for windows.....	\$519
MS Word 5.0.....	\$469
MS Works.....	\$195
MS Mouse/Paintbrush.....	\$215
Flight Simulator 4.0.....	\$69
Quick C.....	\$129.50
Quick Basic.....	\$129.50

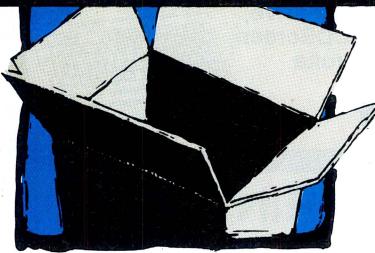
BORLAND

Quattro.....	\$175
Quattro Pro.....	\$599
Reflex 2.0.....	\$325
Sidekick Plus 1.0.....	\$250
Paradox 3.0.....	\$825
Turbo C ++.....	\$325
Turbo Professional & Tools.....	\$165
Superkey 1.16.....	\$139

Dakomm Pty. Ltd trading as
George's Computer Store

154 Elizabeth St SYDNEY 2000 PH: (02) 264 9188 FAX: (02) 264 7852

RELEASE UPDATES



Desktop Machines

AST Update

AST Research

Ph: (02) 418 7444

AST Premium 486/33E and 486/33TE

Std. RAM: 4Mb

Max. onboard RAM: 16Mb; 48Mb total.

Operating system: n/s

Hard drive: 110Mb AT

Disk cache: 32K

Bus: EISA

Floppy drive: 1 x 5.25-inch 1.2Mb

Serial ports: 2

Parallel ports: 1

Half-height devices: 6 internal; 4 external access

Expansion slots: 6 (4 accessible) 486/33E; 5 (3 accessible) 486/33TE

Power supply: 220 watts

Display: Optional

Keyboard: 101 keys

Warranty: 12 months

Price (rrp): tba

AGI Update

Multisource (AGI) P/L

Ph: (02) 899 1899;

Fax: (02) 680 3103

25MHz i486-based 4000A and 4100A

Std. RAM: 4Mb.

Max. onboard RAM: 8Mb; 16Mb total

Operating system: Dos

Hard drive: optional

Disk cache: 64K; 256K optional

Bus: ISA

Floppy drive: 1 x 5.25-inch 1.2Mb

Serial ports: 1

Parallel ports: 1

Half-height devices: 4

half-height; 2 full-height

Expansion slots: 1 8-bit, 6

16-bit, 1 32-bit
Power supply: 200
Display: Optional
Keyboard: 101 keys
Warranty: 12-months
Price (rrp): \$12,000

Syncomp Update



Syncomp (Australia)

Ph: (02) 748 4777;

Fax: (02) 748 4828

Syncomp Micro SXi-16

Std. RAM: 2Mb

Max. onboard RAM: 5Mb

Operating system: MS-Dos

Hard drive: Optional

Bus: ISA

Floppy drive: 1 x 5.25-inch 1.2Mb

Serial ports: 2

Parallel ports: 1

Half-height devices: 1 internal; 2 external access

Expansion slots: 2 8-bit, 3 16-bit

Power supply: 150 watts

Display: MDA

Keyboard: 101 keys

Warranty: 24-months

Price (rrp): 45Mb hard disk drive, mono screen and Dos \$3480

Syncomp Australia

Ph: (02) 748 4777;

Fax: (02) 748 4828

Syncomp Micro Ai-16 (8/12MHz ATs also available)

Std. RAM: 2Mb

Max. onboard RAM: 5Mb

Operating system: MS-Dos; OS/2

Hard drive: Optional

Bus: ISA

Floppy drive: 1 x 5.25-inch 1.2Mb

Serial ports: 2

Parallel ports: 1
Half-height devices: 1 internal; 3 external access
Other I/O: Optional tape drive
Expansion slots: 3 8-bit, 2 16-bit, 1 32-bit (all free)
Power supply: 150 watts.
Display: Optional
Keyboard: 101 keys
Warranty: 24-months
Price (rrp): 45Mb hard disk drive, mono screen and Dos \$3218

Laptops & Portables

Psion Update



Set Technologies

Ph: (07) 841 1611;

Fax: (07) 841 1533

4.77/7.68MHz 80C86 MC600

Std. RAM: 768K plus 1Mb internal RAM disk, expandable to 4Mb

Operating system: RomDos 2.0 (functionally equivalent to MS-Dos 3.22)

Hard drive: No

Floppy drive: Optional external 3.5-inch 1.44Mb

Serial ports: 1 (2 optional)

Parallel ports: 1

Other I/O: 256K flash eprom fitted; optional solid state disks: 512K flash eprom; 512K RAM; 2Mb ROM

Power supply: Eight AA batteries (rated at 30hr continuous operation)

Display: Black on white CGA LCD

Keyboard: 84 keys

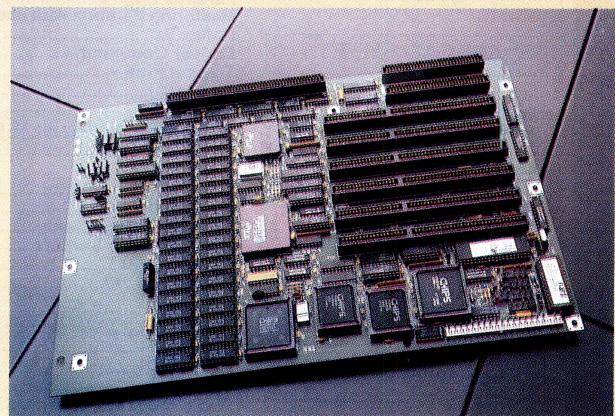
Other: LapLink software supplied; optional internal modem

Weight: 1.9kg

Warranty: 12 months

Price (rrp): \$4755

Upgrade for Compaqs



Brisbane-based Western Computer has released an upgrade board for Compaq's DeskPro 8086 and '286. The Hauppauge 386-DP20/4 board is a 20MHz motherboard replacement which can be fitted with 2 or 4Mb of RAM. Memory can be expanded to 64Mb in 4Mb steps through a 32-bit RAM connector. Covered by a 12-month warranty, the DP20 is priced at \$2000 (with 2Mb RAM). For more information contact Western Computer (07) 262 3122; fax (07) 262 4957.

Laser Printers

Hewlett-Packard Update



Hewlett-Packard Australia

Ph: (008) 033 821

8ppm LaserJet III

Rated noise (working): 52dBa

Compatibility: LaserJet II;

Macintosh version TBA

Paper size: A4, A5, envelopes

Input/output trays: 200/250 sheets

Resolution: 300 x 300dpi

Resident typefaces: 8 scalable from 0.25 to 999.75 points

PostScript: Optional

Other emulations: PCL 5 and PP-GL/2

Data buffer: 1Mb

Buffer expandable to: 4Mb

Warranty: 12-months on-site

Price (rrp): \$4142

Siemens Update

Siemens Australia

Ph: (03) 420 7111;

Fax: (03) 420 7309

4ppm Highprint 7500

Rated noise (working): N/S

Compatibility: Epson FX, IBM ProPrinter

Paper size: A4, A5, envelopes

Input/output trays: 50/50; optional tray holds 300 sheets or 50 envelopes

Resolution: 300 x 300dpi

Resident typefaces: 14 fonts and 24 character sets

PostScript: Optional

Other emulations: PCL-IV, LaserJet II; others via cartridges

Data buffer: 512K

Buffer expandable to: 4.5Mb

Warranty: 12 months

Price (rrp): \$3157

VGA video

Quinto Communications

VGA Producer

Phone: (03) 819 6675

Fax: (03) 819 5360

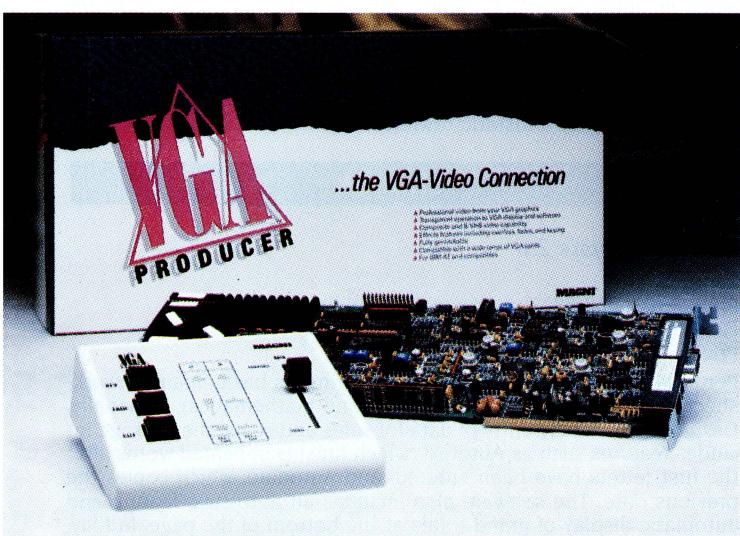
Price: \$4770

Magni's VGA Producer is a gen-locker for VGA equipped PCs – the 8-bit board allows graphics to be combined with video signals. Note that the VGA card must have a socketed DAC – digital/analog converter – Quinto maintain a list of VGA video cards that can be used with Pro-

Atari STE range shipping



Atari is now shipping the long-awaited STE range. The 520STE is fitted with 0.5Mb of RAM which can be expanded with SIMMs to 4Mb; the 1040STE has 1Mb and can also be expanded to 4Mb for 'under \$1000'. Both models are fitted with two additional joystick ports (which can be used with other input devices, such as a light pen) and include a MIDI interface and a TV adapter. The enhanced operating system, TOS 1.6, is fully MS-Dos format compatible. Other features of the new range include fast hardware scrolling, a 4096-color palette and 8-bit pulse code modulation (PCM) sound; the left and right audio ports have a sound range of 20MHz. The STE range is fitted with a blitter chip which frees the CPU from graphics processing. The 520STE is priced at \$795 and the 1040STE is \$995. For more information contact Atari Computers (02) 805 0344; fax (02) 887 2331.



ducer. The board encodes graphics into a PAL composite video signal and this signal can then be combined with a second signal from a VCR or camera – the system can also handle Super VHS signals. A remote control unit is included as part of the system. The unit has a sliding control for fading effects, or the time for fades can be specified from 0.5 to 10 seconds. There are separate horizontal and vertical controls to position the VGA image on the video screen. Other effects available with the system are color keying (a specific color

in the VGA image can be keyed to drop out and otherwise be manipulated) and inversion (the keyed portion of the image is kept intact, while the rest drops out).

Training/help

Step Up Systems

Microref Guides

Phone: (03) 429 5611

Fax: (03) 428 8505

Price: \$34.95 Guide

\$19.95 Keyboard template

CREATE MATH COLUMNS

(Layout, Math, Define)
(Layout, Math, On or Off)
(DEFAULT = NUMERIC)

1. To prepare area of page for columns, set a tab stop for each column in the document. (See CHANGE TAB SETTING(S) procedure.)
2. Hold down **ALT** and press **F7** (Columns/Tables)
3. Press **3** (Math)
4. Press **3** (Define)
5. When screen with column table appears, press arrow keys to move cursor to the desired column. There are 24 columns available (A-X). Columns are located at each tab stop.
6. • To define a calculation column, press **0** (zero), type the formula to be calculated for the column and press **ENTER** (for example: $1.5 * C$, or =)
- To define a text column, press **1**, or

- To define a numeric column, press **2**, or
- To define a total column (totals column to left), press **3**.
- 7. To define the way negative numbers will display after calculation, press arrow keys to move cursor to the column setting and type setting **0** or **1**.
- 8. To change number of decimal places in calculations, press arrow keys to move cursor to the desired column setting and type a number from 0-4.
- 9. To return to Math menu and save settings, press **F7** (Exit)
- 10. To begin typing math columns (inserts a Math On code), press **1** (Math On)
- 11. Type math columns. (See TYPE AND EDIT MATH COLUMNS procedure.)
- 12. To end math columns (inserts a Math Off code), hold down **ALT** and press **F7** (Columns/Tables). Press **3** (Math) and then press **2** (Off).

Available from Step Up Systems and most computer bookstores, the Microref series of software guides are designed to be used as a training aid or by those who occasionally use an application and need a quick reference to the available commands. Guides are available for the latest versions of PC/MS-Dos, Lotus 1-2-3, WordPerfect, dBase III Plus and dBase IV, MS Word, Multimate, Displaywrite and WordStar. The spiral bound guides are organised into a table of contents (with functions grouped into procedures), a comprehensive list of procedures with step-by-step instructions, a summary of commands and an application specific glossary.

Electronic cheques

Access Conversion Systems

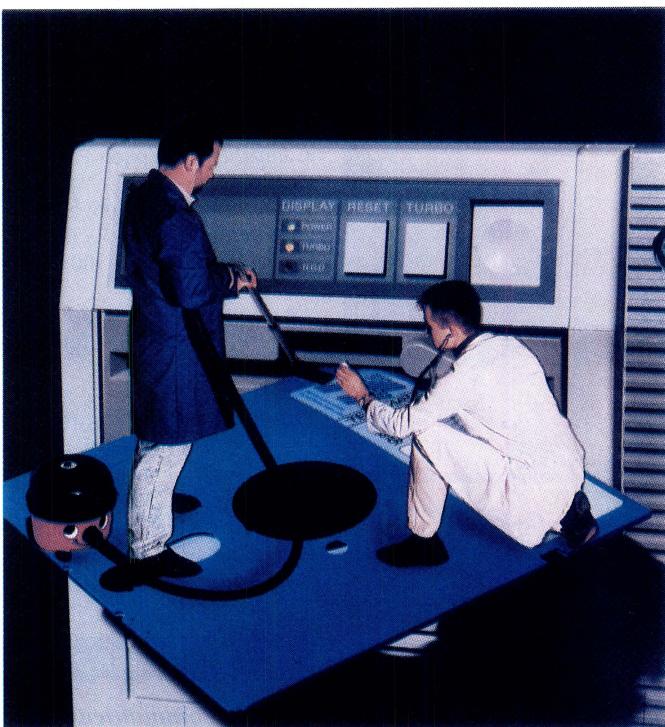
Access*PC
Phone: (02) 958 2585
Fax: (02) 958 4511
Price: \$450

Access*PC is an 'electronic cheque-book' that can be used to process up to 1000 payment transactions in a single batch. It's approved for use by most major banks including Westpac, the National Australia Bank, the ANZ, National Mutual Royal, the State Banks of NSW, Victoria and South Australia, and the R&I – the bank must be using the Access-ETI electronic payments system. There are three utilities to the software: data entry and listing, diskette or data cartridge lodgment, and dial up lodgment. The dial up facility meets the security requirements of the banking industry's user authentication and data integrity guide lines.

New products?

WE ARE ALWAYS seeking new and interesting products to tell our readers about – we are particularly interested in products that would be useful to small businesses, professional offices and 'standalone' users. Please address release information to: **New Products, Your Computer, PO Box 227, Waterloo 2017 NSW**. Preference will be given to those accompanied by suitable illustrations. For inclusion in a specific month, material must be submitted 6 weeks prior to the cover date. We are also interested in the stories behind new Australian product development – if there is a tale to your product that you would like to tell our readers, please contact Mark Cheeseman, Features Editor, on (02) 693 4143.

Intelligent head cleaner



Headmax

Westinghouse
Phone: (03) 397 1033
Fax: (03) 397 1861
Price: \$97 Kit 1
\$102 Kit 2

Headmax is an 'intelligent' floppy drive cleaner, which incorporates head maintenance and diagnostic software. The supplied disk has a non-solvent based dry cleaning surface area on the inner tracks and cleaning, correction and diagnostic software on the outer tracks. The software moves the heads to the calibration area on the disk and the effectiveness of each cleaning cycle is measured – it stops cleaning when no improvement in head signal is detected. A record of the head's performance can be printed out showing the performance of each head and the drive's rotational speed. Headmax is available in both 5.25- and 3.5-inch disks. Kit 1 includes a pump-pack of an anti-static compound for cleaning monitors and keyboards, while Kit 2 includes a carton of antistatic towelettes.

Cashbook

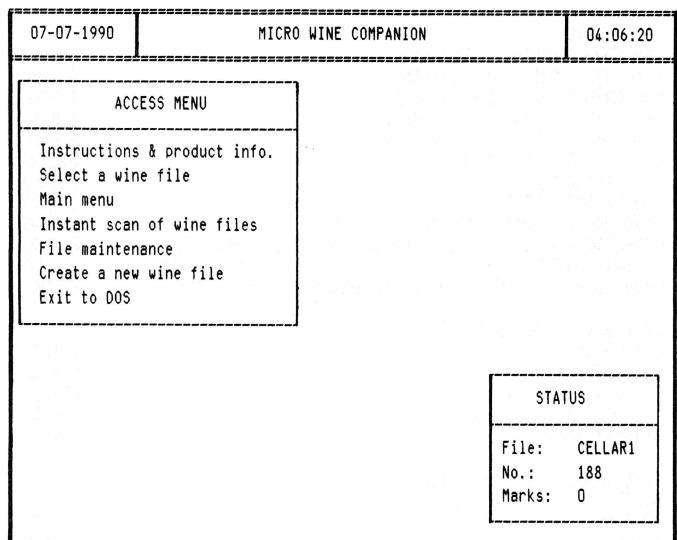
Cram Analysis 2.6
Cajano
Phone: (03) 563 5823
Fax: (03) 563 5788
Price: \$295

Perth-based Useful Software is now offering its basic financial worksheet package, Cram (Columns, rows and mathematics), nationally. Designed to simplify entry of data for sales and costs, the package includes features such as Autotext, which finishes repeated words after the first letters have been entered, and Autodate, which copies the previous date. The software also includes an auto-save feature and automatic display of grand totals at the bottom of the page. In May,

RELEASE UPDATES

Cram was given the Australian Design Award without conditions for product improvement.

Wine cellar manager



Wine Companion

Cathox Pty Ltd
Phone: (02) 955 6999
Price: \$69

Wine Companion is an enhanced database for wine cellars – there

are 19 different criteria available to classify and catalog wines. The software includes eleven different report and listing formats, and a charting and graphing feature (to describe the make-up and value of a cellar). Versions

WordStar 6.0

WordStar Australia
Phone: (02) 411 7255
Fax: (02) 411 6129
Price: \$625 WordStar 6.0
\$625 WordStar 2000 3.5
\$205 Easy Extra 1.5

Newsbytes reports that WordStar has released three new products: WordStar 6.0, WordStar 2000 Release 3.5, and Easy Extra 1.5. WordStar Release 6.0 fully supports the new HP LaserJet III and takes full advantage of the LaserJet's scalable font technology. Typefaces and point sizes can be selected by the user rather than requiring pre-installation as with earlier versions of the program. Kerning is also supported in the new release, so documents can be made to look professionally typeset. HP LaserJet III and PostScript users can access font shadings from within WordStar 6.0 and are not limited in the number of fonts per document. Included with WordStar 6.0 is an upgrade to WordStar's StarExchange file conversion program (version 4.0) that provides full support for WordStar paragraph styles and automatically senses the format of files to be converted. WordStar 2000 Release 3.5 offers advanced page preview (previously available only in WordStar), enhanced printer support, a faster file conversion process, and smoother graphics capability. Easy Extra 1.5, which is targeted at the entry-level wordprocessing user, includes EasyMail, a mailing list manager.

DR Dos 5.0

Quercus Distributors

Phone: (08) 234 1411

Fax: (08) 234 1311

Price: TBA

Digital Research is now shipping Release 5.0 of its single-user, single-tasking Dos-compatible operating system. Notable amongst the new features is MemoryMax, a built-in memory management facility which moves the operating system, TSR software, buffers and drivers into high (above 640K) memory – this can free up to 620K of RAM for use. Other enhanced features are ViewMax, a file and application manager which can be configured to show either icons or text. FileLink, a self-installing serial cable transfer utility and BatteryMax, an optional power-saving utility for portable PCs. Also for laptop users, there is a utility to set cursor size and blink rate. DR Dos has full Dos application compatibility and can support disk partitions up to 512Mb. The operating system also includes a user-specific disk cache and a full screen text editor.

Mail for PageMaker

Microsoft Mail

Microsoft

Phone: (02) 452 0288

Fax: (02) 452 4387

Price: \$615 Server pack

\$215 additional Mac nodes

\$225 additional PC nodes

Microsoft Mail is to be integrated with PageMaker 4.0 for the Macintosh, enabling users to share documents across an AppleTalk network by selecting commands from a PageMaker menu. Excel and MS Word al-

PS/2 serial ports

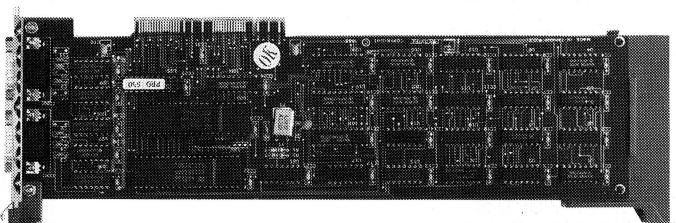
MCA Dual Async Adapter

Electronic Solutions

Phone: (02) 906 6666

Fax: (02) 906 5222

Price: \$299



Electronic Solutions' Micro Channel (MCA) Compatible Dual Async Adapter has two fully programmable, asynchronous 9-pin serial ports – the card is fully compatible with IBM's adapter A for PS/2 models 50, 60 and 80. It is autoconfiguring and supports the programmable option selection (POS) of MCA architecture. There is a programmable baud rate generator (50 to 19,200 baud) and built-in line break and false-start detection.

ready have the Mail system integrated. Intended primarily as the transmission service for a network, there is a full range of store-and-forward and client/server facilities. Application development kits are available for software developers.

PCB design

Protel Autotrax 1.5

Technical Imports

COMPUTER MOTHERBOARDS		
XT 10 MHZ NO RAM	\$ 125	170 MB ESDI
XT 12MHZ NO RAM	\$ 180	350 MB ESDI
XT 15MHZ NO RAM	\$ 200	MONITORS
AT 12MHZ NO RAM	\$ 315	12 INCH MONOCHROME
AT 16MHZ NO RAM	\$ 500	12 INCH DUAL FREQUENCY
AT 16MHZ NEAT NO RAM	\$ 700	14 INCH DUAL FREQUENCY
AT 20MHZ NEAT NO RAM	\$ 900	14 INCH RGB
386 20MHZ SUPPORTS SHADOW USA MADE	\$1500	14 INCH EGA
385 20MHZ SUPPORTS CASHES USA MADE	\$1900	14 VGA COLOUR
386 25MHZ SUPPORTS SHADOW USA MADE	\$1800	14 INCH MULTISYNC
386 25MHZ SUPPORTS CACHE USA MADE	\$2400	PRINTERS
386 33MHZ SUPPORTS CACHE USA MADE	\$2800	135 CPS 9 PIN 80 COLUMN
486 25MHZ USA MADE	\$5900	160 CPS 9 PIN 80 COLUMN
48633MHZ USA MADE	\$7500	135 CPS 9 PIN 132 COLUMN
VIDEO CARDS		180 CPS 24 PIN 10 COLUMN
CGA WITH PRINTER PORT	\$ 80	180 CPS 24 PIN 132 COLUMN
MGA WITH PRINTER PORT	\$100	LASER PRINTER 6 PPM
CGA/MGA (MANUAL CHANGE) W/PRINTER PORT	\$120	LASER PRINTER 8 PPM
CGA/MGA (AUTO CHANGE) W/PRINTER PORT	\$150	LASER PRINTER 11 PPM
EGA 640 X 350 W/PRINTER PORT	\$200	POSTSCRIPT LASER PRINTER 8 PPM
EGA 1024 X 480 W/PRINTER PORT	\$300	POSTSCRIPT FOR HP, CANON, RICOH 2.5 MB RAM
VGA CARD	\$210	POSTSCRIPT " " " " 4.5 MB RAM
VGA 16 BIT CARD	\$ 300	RAM EXPANSION CARD 4 MB RAM FOR HP LASER
DRIVER CARDS		INTEGRATED CIRCUITS
360KB FD CONTROLLER	\$ 50	4164 RAM
1.2 MB FD CONTROLLER	\$ 75	41256 RAM -12,-10,-8
360 720KB 1.2MB 1.44MB - CONTROLLER 2 DRIVERS	\$100	41464 RAM
360 720KB 1.2MB 1.44MB -CONTROLLER 4 DRIVERS	\$180	414256 RAM -12,-10,-8
XT HARD DISK CONTROLLER FMF	\$ 89	411000 RAM -12,-10,-8
XT HARD DISK CONTROLLER RLL	\$ 110	
AT-386 HD FD CONTROLLER FMF (WD OR DTC)	\$ 250	MATHS CO-PROCESSOR
AT-386 HARD DISK CONTROLLER RLL (WD OR DTC)	\$ 355	8087
IAT-386 HD CONTROLLERS ESDI (WD OR DTC)	\$ 450	8087-2
/0 CARD WITH 360 DRIVE CONTROLLER	\$ 100	8087-1
I/O CARD WITH 360 1.2 620 1.44 CONTROLLER	\$ 130	80287-6
2 SERIAL, 1 ON, 1 PARALLEL CARD	\$ 90	80387-10
2 SERIAL, 2 ON, 1 PARALLEL CARD	\$ 120	80387-16
4 SERIAL, 1 ON CARD	\$ 120	80387-20
4 SERIAL, ALL ON CARD	\$ 250	80387-25
		80387-33
POWER SUPPLIES		MODEMS
150 WATT	\$ 120	1200 BPS 300 BPS INTERNAL
180 WATT	\$ 150	1200 BPS 300 BPS 1200/75 BPS
200 WATT	\$ 200	2400 BPS 1200 BPS 300 BPS INTERNAL
220 WATT	\$ 250	9600 BPS
		FAX CARD
DISKETTES		RAM CARDS
GCS 5.25 360KB X10	\$ 10	384 KB RAM CARD FOR EX COMPUTER
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CONCURRENT XM 3 USER	\$ 351	SUPER PROJECT PLUS		CROSSTALK MARK IV	\$375
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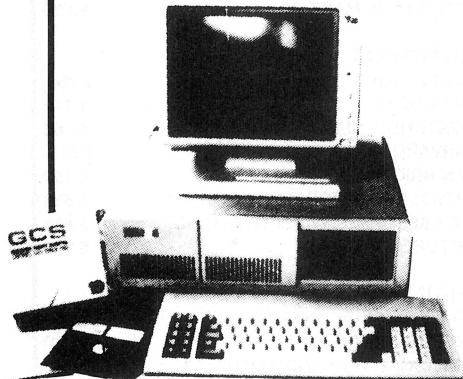
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Phone: (02) 954 0248
Fax: (02) 925 0311
Price: \$1450

Tasmanian-based Protel has released version 1.5 of its precision printed circuit board design package, Autotrax. Enhancements include a toggle between metric and imperial measurements during layer (units can be

mixed on a single drawing), automatic generation of curved connections in either manual or autorouting mode, and the automatic generation solid polygon fills, wrapping around existing tracks in either the top or the bottom layer. VGA graphics (1024 x 768) are now supported and both speed and quality have been improved for autorouting.

CD-ROM drive

Philips CM200

Read Only Memory
Phone: (02) 550 3938
Fax: (02) 550 1195
Price: \$906 CM201
\$1133 CM212
\$1199 CM221
\$1466 CM231

CD-ROM specialist, Read Only Memory are now shipping the Philips range of CD-ROM drives. The units all have an average access time



under 500 milliseconds and a data transfer rate of 153K per second. The CM201 (the PC bus model) and the CM212 (SCSI) have digital output only, while the CM221 and CM231 also have audio output – the first two are internal units and the other two are standalone units.

Electromap



Electromap

Ramware
Phone: (07) 353 5677
Fax: (07) 353 5404
Price: \$359 for disk or CD-ROM version
(included free with purchase of NEC CDR-75 CD-ROM player priced at \$1695)

Nowadays, you can use your computer as a dictionary, thesaurus, encyclopedia or bible. So why not an atlas? The Electromap World Atlas is a menu-driven database and retrieval system containing a complete atlas of the world, capable of running on PC-compatible machines with EGA graphics or better. Of course, this sort of data takes up a fair amount of disk space – approximately 5Mb, and a CD-ROM version is also available if you have a drive and don't want to take up space on your hard disk. A mouse makes 'navigating' the world relatively simple, zooming in to show more detail in areas of interest. Statistical information can also be displayed, with data such as population, religion, language, life expectancy, and even the infant mortality rate, plus a number of other criteria.

Faxes for Windows

FaxIt
Software Suppliers
Phone: (02) 888 1955
Fax: (02) 888 7965
Price: \$299

FaxIt allows users running Microsoft Windows to redirect files to their fax card for transmission – check with Software Suppliers for compatibility of cards. The FaxIt

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WIN A WESTERN 386-16SX PLUS SOFTWARE.

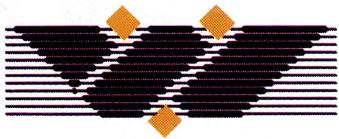
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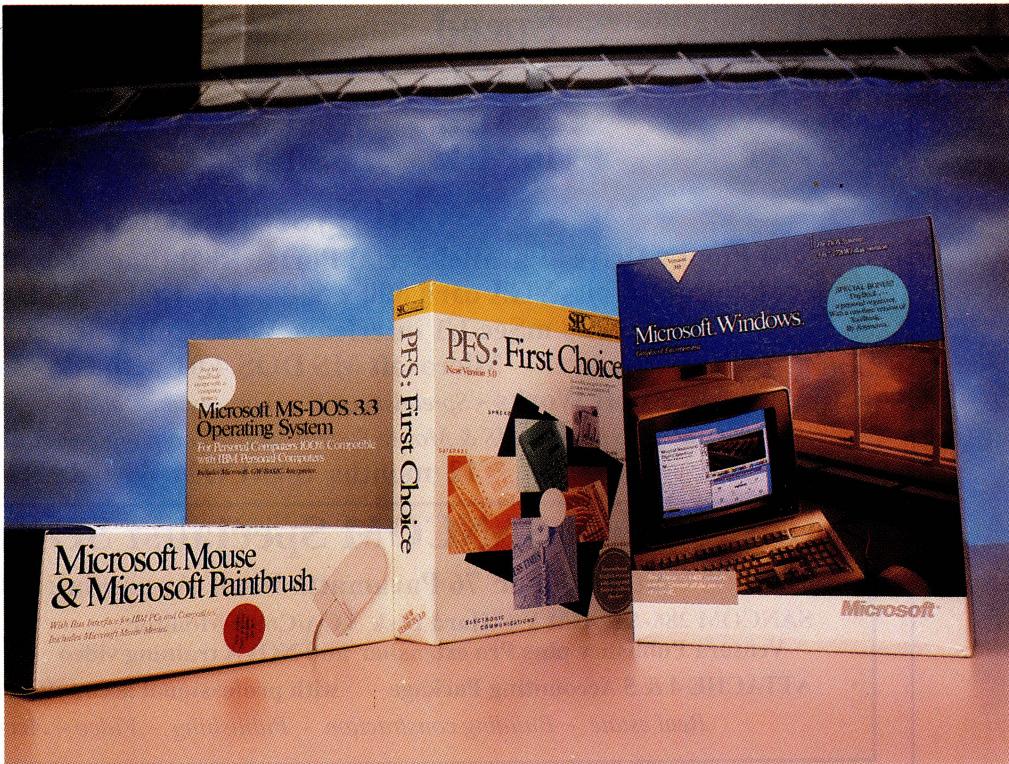
CONDITIONS OF ENTRY: 1. The competition is open only to Australian residents whose correct entries are received before last mail 31/10/90. Entries received after closing date will not be included. Employees of the Federal Publishing Company Pty Ltd, Western Computers Pty Ltd, and their families are not eligible to enter. 2. South Australian residents need not purchase a magazine to enter, but may enter only once by submitting their name, address and a hand-drawn facsimile of any of the coupons to Federal Publishing Company Pty Ltd, P.O. Box 227, Waterloo NSW 2017. Prizes are not transferable or exchangeable and may not be converted to cash. 4. The judge's decision is final and no correspondence will be entered into. 5. Description of the competition and conditions of entry can be obtained on how to enter from page 6 of the competition conditions. 6. The competition commences on 20/7/90 and closes with last mail 31/10/90. The draw will take place in Sydney on 7/11/90 and the winner will be notified by telephone and letter. The winner will also be announced in The Australian on 14/11/90 and a later issue of Your Computer magazine. 7. The prize is: One only Western 386-16SX computer in a desk top or mini tower case with power supply, floppy disk drive and hard disk drive, VGA card, mouse and monitor. Software is also included. Total prize value \$8,974.00. 8. The promoter is: The Federal Publishing Company Pty Ltd, 180 Bourke Road, Alexandria NSW 2015. Permit No. TC90/0000 issued under the Lotteries and Art Unions Act 1901; Raffles and Bingo Permit Board Permit No. 90/0000 issued on 00/00/90; ACT Permit No. TP90/0000 issued under the Lotteries Ordinance, 1964.

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286 - AT	16 MHz	1 M	\$ 2950	\$ 3700

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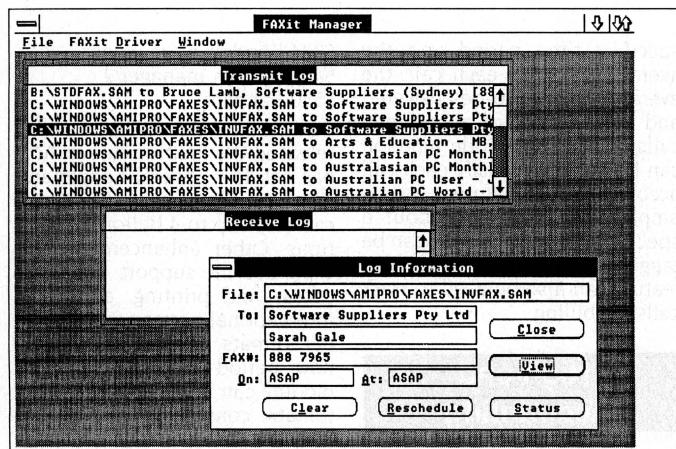
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RELEASE UPDATES



driver, which appears to Windows as a printer device, is used to specify date and time of transmission, whether or not to in-

clude a cover sheet, and to direct the fax either to an individual or a selected group (named groups are supported). Both portrait and

landscape modes can be used and there is a standard resolution (200 x 100dpi) as well as a fine (200 x 200dpi). The FAXit Manager maintains the list of documents to be faxed, transparently monitors incoming faxes, has utilities for viewing and printing faxes, and gives access to the fax phone directory. Fax files can be converted into TIFF (compressed or not), PCX and DCX formats for import into applications supporting these. The software includes a screen capture mode.

LaserJet cartridges

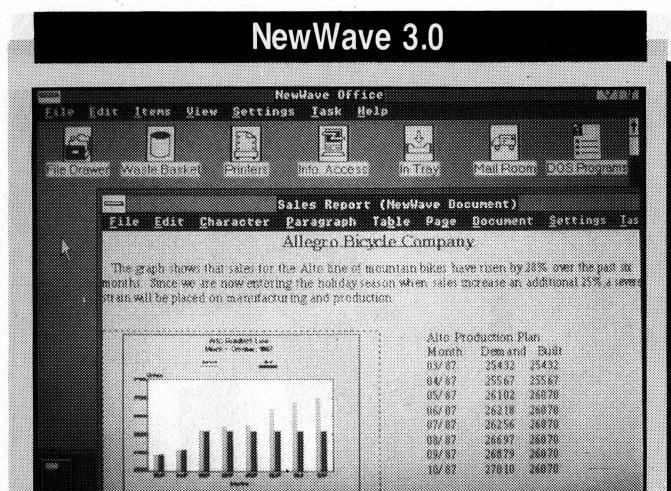
Scalable typeface and PostScript cartridges

Hewlett-Packard

Phone: (008) 033 821

Price: \$717 typeface cartridge
\$1250 PostScript cartridge

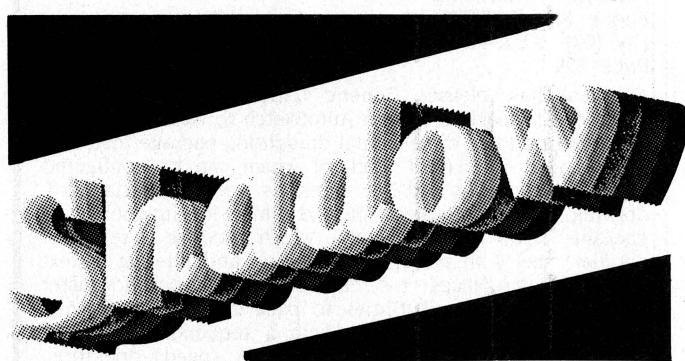
Hewlett-Packard has added two scalable font cartridges to its MasterType Library – one has 26 typefaces, the other 25. When used with HP's Type Director, these cartridges allow users to produce screen fonts for WYSI-



Month	Demand	Built
03/90	25432	25432
04/90	35567	35567
05/90	36102	36870
06/90	26218	26870
07/90	36256	36870
08/90	36697	36870
09/90	36879	36870
10/90	37040	36870

Hewlett-Packard
Phone: (008) 033 821
Price: about \$400

Hewlett-Packard are shipping the new version of their application environment, NewWave 3.0, to take advantage of the enhancements made to Microsoft's Windows 3.0. Because of better memory management under the new version of Windows, the memory requirement for NewWave has dropped from 3Mb to 2. There is a new object storage feature which allows users to share information on a network by moving icons in and out of on-screen folders – this allows users to 'loan' files without actually sending them across the network. Another feature of NewWave is a super-macro facility, the 'agent', which is used to automate routine tasks; for example, a standard monthly report can be automatically generated on the last day of every month: data is collected from a spreadsheet, graphed, merged with a report form and distributed electronically. Users need only step through a repetitive task once, recording it for the agent, and the task can then be scheduled to run at a later date, or upon request.



Novell - 3COM Optical Fibres

Novell Administration - A two day course to learn advanced skills for managing Novell networks. Covers user installation, security, Syscon, Fconsole, Login scripts, menus, utilities, printer management etc. 1 computer per student. **Cost: \$350.**

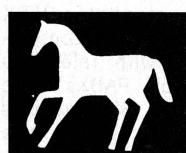
Dates: August 22 - 23 and September 19 - 20

3COM and Novell - Technical - A three day course for computer professionals to gain strong practical skills in the installation and maintenance of networks. Covers cabling, card installation, system design, adding users, sharing resources, etc. Extensive practical 'hands-on'. **Cost: \$480.**

Dates: October 24 - 26 and November 14 - 16

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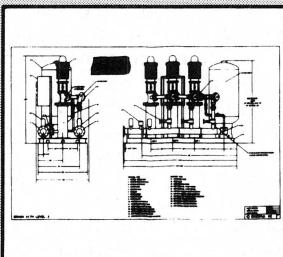
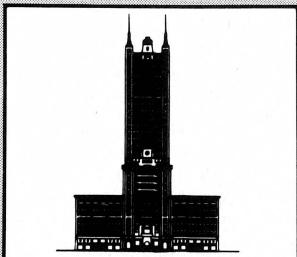
Dates: September 17 - 19 and November 21 - 23



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991, Whitehorse Road,
Box Hill, VIC 3128.**

Generic CADD 3+



Autodesk Australia
Phone: (03) 429 9888
Fax: (03) 429 2296
Price: \$595

Autodesk has released Generic CADD 3+, to offer a full range of Cad packages, from AutoSketch to AutoCad. This is a full-featured two-dimensional draughting package that supports up to 256 layers, each of which can be configured separately for color and line types. As well as the standard, drawing, snap, component, fill and dimension functions, the package includes 'smart lines', which produce a series of parallel lines with automatic trimming and filleting, a text function that replaces on-screen text with asterisks for faster redraws and a set of utilities to pack data in the drawing database, to write batch files with a sequence of drawing commands and an image function that speeds operation. Hardware requirements are an XT (or better), mouse (a large range of digitising tablets is also supported) and at least CGA graphics – a maths coprocessor and hard disk are recommended.

WYG applications. The company has also announced version 2.0 of the Type Director, which supports the type scaling capabilities of the LaserJet III. There is also a new PostScript printer cartridge for the LaserJet IIP, III and IID models, which has 35 typefaces. Memory requirements for printers using PostScript are 2Mb, while the IID requires 4Mb for two-sided printing using the cartridge.

Video training

Paradox Learning System
Micro Management Systems
Phone: (02) 452 5966
Price: \$649 each module
\$1099 both modules

The Paradox Learning System comprises two separate modules, one covering the basics of Paradox and the other, the more advanced features. The course

features 'tri-media' learning: a video cassette, data diskette and manual are all supplied. The basic module covers viewing tables, editing and entering data, creating and using forms and queries and other topics, while the advanced module covers the likes of creating graphics, form memos, using scripts and programming the Paradox's personal application language (PAL).

PABX monitoring

Q-Reporter
Telecom Australia
Phone: (03) 606 8660
Price: about \$5000

Intended for use by small businesses, Q-Reporter is a software package that monitors PABX usage. It requires an AT-compatible and works with Telecom's 9600 range of PABXs. The package's Time Slot reports show the number of calls in a

specified time period and the average length of each call, the average time-to-be-answered and the number of abandoned calls. An Account Code function can be used to classify each call according to its nature – for example, calls enquiring about a specific product or service can be tagged for later reporting; this feature can also be used to track calls for billing.

High-end accounting

Accpac v6.0
Associates
Phone: (02) 923 2066
Fax: (02) 923 2139
Price: \$1050 Accpac Plus GL

\$324 Windowing manager
\$450 System manager/2
\$550 Lanpack

Computer Associates have released the first module in Accpac 6.0. The General Ledger and Financial Reporter (GL) now caters for up to 4 billion transactions. Other enhancements are expanded file support, faster file access and printing, additional international currency and number formats. GL transactions are now period sensitive and the module can link accounts for automatic consolidation and reallocation. The new system managers – one for Windows, the other for PS/2 systems – control the communication and database facilities between the Accpac modules. Version 6.0 modules are all version 5 compatible.

Standby power



Datasaver SPS

Critec
Phone: (002) 73 0066
Fax: (002) 73 1871
Price: under \$2500 Datasaver 10+
under \$1600 Datasaver 5+

Critec's Datasavers are self-contained, battery powered AC backup power supply units with built-in line filters. On failure of mains power, or a drop in line voltage, the Datasavers cut in under 0.02 seconds; when line voltage returns to normal, the units cut out under 2 seconds. The Datasavers feature an automatic alarm reset; the rate of the audible alarm and a flashing red light increases as battery power runs down. Battery recharge time is 5 to 8 hours. The Datasaver 5+ will protect a single PC, while the 10+ will protect two PCs or a laser printer and PC. □

RITA
PLUKSS

BECKER CAD IS touted as being a professional computer aided design package. I've no idea what's actually meant by the term 'professional', whether they mean it's meant to be used by the professional designer draftsperson, or whether they mean that anybody regardless of design or drafting skills can use BeckerCad to produce professional looking drawings.

This question came to mind while scanning the impressive looking manual that accompanies BeckerCad. It begins by introducing you to the concepts and uses of computer aided design (CAD) which is then followed by simplistic tutorial material. None of this could possibly be aimed at the professional design or draftsperson. More unfortunately, even this simple introductory area contains errors.

The design and layout of the manual itself is excellent, with a comprehensive contents section, section dividers, index and glossary. All this is in a hard covered three ring binder which makes it easy to use on a flat surface while working. But, sadly, the style of writing and the actual content of the manual leaves much to be desired. The writing tends to be stilted and difficult to read. At times, it's also difficult to comprehend, which leaves me with the impression that it may have been translated into English by a person who speaks it as a second language. Some of the syntax and idioms used required me to stop and think about what was really meant.

Although the minimum systems requirement for BeckerCad is a double sided-drive and 1Mb of RAM (it's recommended that 2Mb of RAM be used), in reality a hard drive would make the program easier to use. As for which monitor to use, the monochrome offers a clean and clear working environment, but a color one may be used if necessary. (Version 1.2 of BeckerCad has a switchable option allowing either 50Hz or 60Hz.)

When using the color monitor, BeckerCad only works in medium resolution, and at this point, exhibits one of the most annoying oversights of many programmers. If a program only works in one of the given color resolutions and is run in the wrong

BeckerCad ST

resolution, why do users have to put up with a dialog box telling them to reconfigure? One would expect the program to do this automatically, especially a commercial or professional program.

BeckerCad itself comprises a three disk set – the program disk, library disk, and an auxiliary disk containing the font editor, GDOS, metafile setup, printer drivers and the like. Before you can use BeckerCad, it

One of the best features of the program is a very effective Undo and Reinstate function.

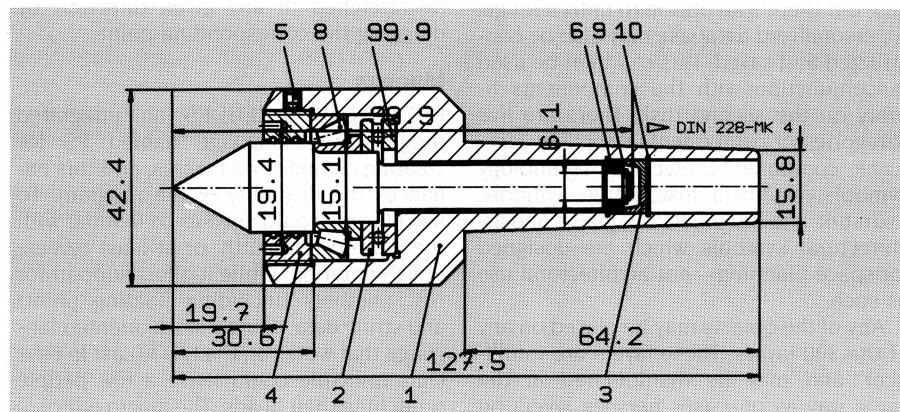
must be installed and the steps to do this are outlined very succinctly in the opening chapter of the manual. This installation process provides you with a personalised working copy of BeckerCad, and after installation, copies may be made for backup purposes or it can be installed onto a hard drive.

Object oriented

NOW TO THE program itself. BeckerCad, as expected, is strictly object oriented and component based where each individual

item can be made up of smaller elements (these may be modified at any time if required, without having to redraw the entire object) and brought together to make a complete object, for example, designing a bookcase or side board. Each of the shelves, drawers, cupboards and so on, are drawn as separate items and then placed together to produce the finished product. At any time, the whole arrangement may be changed by modifying, deleting or adding new component parts. Drawing the component parts themselves is relatively easy when you consider that you have a choice of 40 drawing tools which are all selectable through icons.

BeckerCad has been designed around the standard GEM interface and uses icons and pull-down menus effectively. The mouse is used extensively throughout the program, and the majority of operations are accomplished by pointing and clicking. For those of you who are not comfortable with point and click operations, shortcut keys are provided for many of the commands. One of the best features of the program is a very effective Undo and Reinstate function which permits step by step back tracking of past operations and then reversing the process back to the complete drawing. An overlay grid can be specified to any square dimension, and this may be toggled as well as snapped. BeckerCad also provides up to 300 work-



Objects – whether from the library or user generated – can be clipped to a buffer, pasted from a buffer, copied, moved, scaled to size, rotated, mirrored or fixed. Any of the objects may be placed on any of 300 intelligent layers.

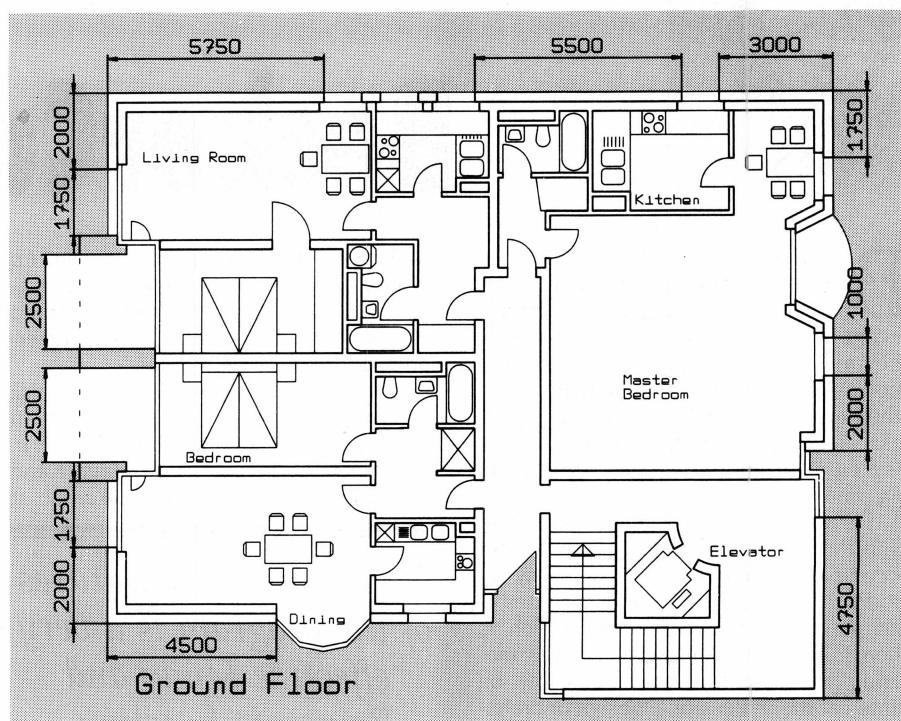
ing planes which is an excellent feature when you want to show different levels of information.

Before starting a project, you must first select your page format (a choice of 40 formats ranging from A5 to A0 in either landscape or portrait) and scale. This, of course, means that you have to have some idea of how your design will fit onto the page and what your design is going to entail. The next step is to set your working units and assign the grid spacing. These parameters may then be saved and reused in other jobs.

The element options provided with BeckerCad should meet most user's requirements. They include circles, ellipses, circular arcs, elliptical arcs, rectangles, squares, parallel lines, single lines, poly (connected) lines, concentric circles, concentric ellipses, circle segments, ellipse segments, triangles, parallelograms, polygons, rays, freehand lines and symbols. You can also define the number of rays from a given point, calibrate a line into equal fractions or have multiple replication of components through a specified angle. To make the job even easier, there's a choice of pen thicknesses. Added to this is an excellent set of construction options which include plumb lines (perpendicular lines), trim lines, break lines, fillets and chamfers.

Objects themselves are placed on the drawing board by selecting an icon and clicking on points on the screen. Or, you may create your own objects and save them as symbols (to augment the symbol library that comes with the package). Objects may be clipped to a buffer, pasted from a buffer, copied, moved, scaled to size, rotated, mirrored or fixed. Fixing stops any further manipulation of the object, but there's an option to unfix a range. A personalised database may also be constructed and saved. This can then be used in conjunction with the components library on the second disk. There are five categories of components supplied: electronic components, electrical technology symbols, electrical installation symbols, hydraulic and pneumatic diagrams and architectural symbols which are designed for space planning – not architectural use as such.

Any of the objects may be placed on any of the 300 layers. These layers are intelligent, and may be manipulated in the same way as one uses perspex layers on manual drawings. Each separate layer may be fixed, activated, or deactivated (made invisible). Something that I found frustrating here was that to use the layers, you



BeckerCad is object oriented and component based – each individual item can be made up of smaller elements and brought together to make a complete object. Drawing the components is made easy through a choice of 40 drawing tools.

first had to add them as they are not automatically available.

Form variation is open ended with the ability to stretch an object in any given direction. When an object is selected, it's overlaid with an imaginary frame with selectable points. The centre point moves the whole object around the screen, while the other eight points allow the object to be stretched in any given direction by dragging the corresponding point.

Macros

BECKERCAD INCLUDES an integrated programming language named PS for creating complicated macros, and this enhances the flexibility of the program. To use PS, you would need to be familiar with the concepts of Forth, or at least reverse Polish notation. While it offers support for real numbers (including floating point) and string data, using a stack oriented language that works on the LIFO (Last In First Out) principle could leave a few people scratching their heads. The macro editor is accessed from within BeckerCad itself and has standard editing features while file management is via the function keys.

An interesting aspect of PS is that it can

be used to place objects under direct program control. This opens the way for parametric programming, where you can draw similar objects based on numeric data input. Unfortunately, it can only be used for automating the drawing process itself as it doesn't allow you to select an object and then have that object's parameters returned as variables. This tends to limit its overall use to the creation of objects only, as they cannot be changed or deleted within this function.

Another excellent feature of BeckerCad is the information box when you are actually drawing your component or object. After selecting the first point of a line, the cursor displays an information box containing the X,Y coordinates, and the length and angle the cursor is in relation to the first point. When placing objects such as circles, the box displays information regarding the radius and so on. Instead of having to input this information, you simply move the cursor until the values are correct and then place the second point. But, I found that the cursor can behave rather erratically during this operation.

Text may be placed anywhere on the

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Shareware users are even encouraged to copy their software and give a copy to their friends so they too can decide if they would like to use the product, and of course then pay for it. Word would spread slowly if the author solely relied upon users just sharing copies with their friends. User groups are encouraged to share the software with their members on a non profit basis. Many user groups set up Bulletin Boards so that members can "down load" software which they would like to evaluate for use. This is another accepted way of distributing shareware. Some commercial operations also distribute shareware and charge for the disks. The more they can sell the more profit they make so they encourage you to buy the evaluation copies and sometimes "forget" to tell you that if you want to continue using the software that an additional payment is required.

It is fine for these commercial operations to distribute Shareware as long as their ads clearly state that the additional payment is required. Software for \$5 is just too good to be true!

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Public Domain software is created by authors who chose not to seek formal rights or royalties. There is no restriction of any kind on distribution of this kind of software. Most public domain software is games or utilities. There are very few complete products in the public domain. Shareware software on the other hand is distributed so the user can evaluate the software to decide whether he will register with the author and continue to use the software. Shareware is an alternate method of marketing software, not really a different kind of software. In fact the more successful Shareware products hold their own against their commercially distributed competitors. The greatest difference is that the Shareware product's packaging is not as fancy and the price is much lower.

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A collection of disks is generally referred to as a Library. A Library may be kept by a user group, a bulletin board operator or by a commercial diskette distributor. Some education establishments, companies and government departments have a library on a CD-ROM (a large capacity read only disk drive using compact disk technology) and allow students to make copies at no or at a very low cost. And of course it is quite acceptable for your friends to give you copies of Shareware software that they may be using or have evaluated. The only restriction is that if you decide to use the software then you should register so that the author is rewarded for his work.

Do I need to join a Library?

Some commercial libraries and most user groups insist that you join before you can purchase disks. If you intend to purchase disks a properly prepared catalogue will make your selections

easier and repay your membership costs many times over.

Other libraries allow purchases without any membership fees and some offer a free catalogue. The free catalogue is usually a very short description of available disks and is often given away as an insert in magazines. Of course there is no such thing as a free lunch — the brief descriptions in free catalogues mean that you will invariably purchase more disks than you really need. The descriptions are so short you really are taking a lucky dip!

What is PC-SIG?

PC-SIG is the world's most respected Shareware Library and contains well over 2000 disks. PC-SIG does NOT require you to become a member to purchase diskettes but is the leading publisher of information on Shareware. PC-SIG also makes its Library available on CD-ROM for companies, educational bodies and government departments.

Every two months SHAREWARE magazine is available in newsagents at around \$6.50 a copy. The magazine describes new additions to the PC-SIG Library, has comparisons and reviews of available products as well as regular columns. The magazine is also available on a subscription basis at \$20 per annum, a saving of \$19.

"The Encyclopedia of Shareware" is a two volume catalogue with detailed descriptions of the disks in the PC-SIG Library. To make finding the disks you require as easy as possible the disks are grouped by category with extensive indexing. The two volume set is available at selected bookstores and computer shops at \$39.95. If you choose to subscribe to SHAREWARE magazine for just \$20 you can purchase the ENCYCLOPEDIA for only \$29.95, a further saving of \$10, and the post and packing is FREE.

For a total of only \$49.95 you will not only have the best reference work available but you'll be kept up to date for a full twelve months. As a further bonus we offer special discounts to subscribers BUT you do NOT need to be a subscriber to purchase disks. There is no minimum purchase. Our regular prices for trial disks are - single disks \$13, any five disks \$50 and then additional disks in that order for just \$5. Remember though it is easier to select the disks you would like if you have the two volume Encyclopedia and the magazine.

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PC-SIG's distributor in Australia, Manaccomm offers the full PC-SIG Library and also has arrangements with many authors to represent them in Australia. Yes, the complete registered copies of the best available Shareware products with manuals, telephone support and access to upgrades right here in Australia.

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GENISCAN 4500

Are you a lawyer, doctor, secretary, receptionist, writer or student? Do you work with words? The PRODIGY O.C.R. software supplied with the GS 4500 scanner allows you to scan text and have it converted into ASCII characters, ready for importing into your Word Processor or Desktop Publisher. It is pre-trained to recognise most common fonts, from 6 point to 20 point, and can correctly interpret Mono Spaced AND proportional printing. It is simplicity itself to "teach" PRODIGY a new font, and this can be done in around ten minutes. No more repetitive typing, no more manually re-typing documents. The GS 4500 allows you to break free of the keyboard!

GENIUS GM-F 302/303 (PS2 Compatible also)

The GENIUS GM-F series of mice are the very latest in ergonomic design. Both mice are Microsoft® and PC SYSTEMS® compatible, and the operating mode can be hardware or software selected. They come supplied with 9 pin/25 pin adaptor. Both mice are supplied with the variable resolution driver (350-1050 d.p.i.), pre-defined menus for popular software, menu maker for creating menus for any programme, the menu compiler to eliminate the usual "lag" with other "pop-up" menus and DR GENIUS, the superb drawing and graphics package. The GM-F303 is also supplied with CasCAD I, a 2-Dimensional drafting and planning package. The GM-F302 and GM-F303 are completely compatible with the PS/2 system, and can be supplied with a 6pin mini DIN connector for your computer.

CAMERON HAND SCANNERS

If you own an AMIGA, or an ATARI ST, there's no need to feel left out. Pactronics are pleased to announce the release in Australia of the Cameron Hand Scanners. The TYPE 10 (Suitable for Amiga and ST) is a 105mm wide B&W scanner. The unit has variable resolution (100, 200, 300, 400 d.p.i.), and represents colours with up to 16 gray scales. It is supplied complete with Handy Painter graphics software and Handy Reader O.C.R. software. The Handy Reader software comes pretrained for most common fonts, but can be easily trained to even recognise Amiga fonts printed on a dot matrix printer!

The TYPE 6 scanner (suitable for AMIGA only) is colour, glorious colour! It can scan a picture in ANY Amiga resolution, even EXTRA HALF BRIGHT and H.A.M. Mode. It saves in standard IFF format, suitable for graphics or D.T.P. packages. Now you really can create documents as good as your ideas. Printer Head Scanners are also available for the Amiga and ST.

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drawing at any time, and there's a selection of font size and styles. If necessary, the included font editor could be used to produce your own fonts, but the resolution provided may be too coarse for any real use.

Output of the final drawings may be sent to either the printer or plotter. The drivers included on disk are the Epson LQ and FX, Atari SLM 804 and the NEC P5/6/7 printers, as well as Apple LaserWriter. The two plotter drivers are for the HP-GL and Epson HI-80 plotters. There is also a PS-A3 driver for PostScript printers and phototypesetting machines.

I encountered a few problems using BeckerCad first off, some of the problems were operator (that's me) generated, others were program generated, and yet, others were manual generated. But, I'm sure with regular use these annoyances and problems could be sorted out – everything has its idiosyncrasies, and BeckerCad is not an exception.

But, there are a few shortcomings to BeckerCad. Potentially, one of the most annoying is the extra information that's on the screen around the crosshairs. The rectangle that follows the crosshair around and contains information regarding your X,Y position, height, width, length and so on (and is itself an excellent inclusion in the program), masks the area directly adjacent to the cursor. This is very annoying and can become quite awkward

An interesting aspect of PS is that it can be used to place objects under direct program control.

when trying to accurately position the cursor. I'm sure that with some thought, a better location could have been found for this on the screen information, as the immediate work area should be clear of any extraneous data.

When using the grid option and undo functions, the part of the grid that's under the undone part of the drawing also disappears, leaving you with holes in your grid. The speed to redraw layers is quite acceptable, but I had some trouble with slow response times in exiting dialog boxes, activating some of the drop-down menus, as well as changing from part to full screen

use. At times, the program can be very sluggish to respond, and yet, be very touchy when using the keyboard shortcut options.

Although the manual tells you that a combination of the Control key and another key are needed to activate a function, this is not the complete story. You may use the Shift, Alt key or no second key at all. Just press the desired key on its own to activate your chosen function, for example, press 's' and the save file dialog box appears. This caused me some problems at first when I was in text mode, but I soon sorted out what was happening – with no help from the manual though.

Other perceived shortcomings were the inability to plot to tolerances less than 10mm at 1/50th, and that points could not be specified numerically. Isometric or perspective projections could not be made, and therefore, no spatial representations could be done of the drawings. With no option for elevation views, which is in reality a 2D limitation, you cannot show or handle complex 3D form. The ability to handle 3D form has become one of the major strengths in using a CAD package.

Uses

SO WHAT CAN it be used for? I guess its main function would be for repetitive drawing tasks that involve putting together working drawings, or in school classrooms to teach CAD applications. It could be used for space allocation drawings in architecture (floor plans), preliminary sketches and blueprints, civil engineering for force diagrams, construction drawings, wiring diagrams and the like. With a 2D limitation, a coarse dimensional accuracy and what tends to be a confusing manual, the market for this program (unless there are upgrades to address these problems) could be limited.

This has been a hard package to review. It has good points, but it also has bad points. When compared to other CAD programs for the ST as well as other computers, BeckerCad does offer a lot for a small price. Compared to what the industry pays for their CAD packages the price is small, but the cost to you and me as ordinary computer users with limited funds to spend on computer accessories, is high enough to expect a program to cover all required areas adequately.

BeckerCad ST (\$349 rrp) by Jurgen Meyer is an Abacus product and distributed in Australia by Atari Computers, 376 Lane Cove Rd, North Ryde 2133 NSW, (02) 805 0344. □

THE BIGGEST ...AND THE BEST!

Which one monthly magazine is virtually essential reading for anyone in Australia who is involved in, or interested in electronics? There is only one choice: *Electronics Australia with ETI*, which combines the best of both *Electronics Australia* and *ETI*.

Electronics Australia has been the top selling and most popular of Australia's electronics magazine for over 50 years, while *ETI* has been its leading and most aggressive competitor for almost 20 of those years. Now these two leading titles have been merged, to produce a magazine that is not only the biggest, but also the brightest and most informative in its field.

Each month, *Electronics Australia with ETI* brings you news of all the latest developments in electronics. We cover virtually all aspects of this diverse and fast-moving field - from computers to communications, from hi-fi to hobby electronics, from the latest solid-state technology and devices to what's new in video and consumer electronics.

We have Australia's most experienced electronics writers, its most respected equipment reviewers, and its most lively and informed columnists. So whether you're a design engineer or research scientist, a service technician, a college student, a radio amateur or a keen enthusiast, *Electronics Australia with ETI* brings you a wealth of interesting and informative reading. It's by far the best way to keep up to date with all aspects of this challenging technology!

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PETER
PHILLIPS

LAST MONTH I promised a look at BeagleWrite GS, a wordprocessor from Beagle Bros. that owes its origins to Multiscribe. Also, a font editor and a database program make up the software reviews this month. Looking ahead, news is that Broderbund are working on a revised version of Print Shop for the IIe/IIC, to be called, predictably, the New Print Shop. It will include many new features, and a IIGS version could well follow.

Although not yet available in Australia, a new IIGS video digitiser card has been released by Virtual Realistic in the US. This card allows video sampling at the incredible rate of 15 frames per second in black and white, and five frames per second in color. Because the software supports windowing, a moving picture can apparently be stored in memory and each frame examined by shifting windows. The expected price in Australia will be around \$400.

In the days of 64K computers such as the Apple II, print fonts were generally restricted to those available in the printer. If you wanted more fonts, you either fitted a font cartridge to the printer, connected another printer, or simply forgot about it. These days, graphics based wordprocessors allow fonts that are only limited by your imagination, and there are currently hundreds of fonts available either from public domain software or commercial packages. However, no matter how many fonts one has in the font menu, there is always room for one more, and GS Font Editor from Beagle Bros. is a way of creating your own.

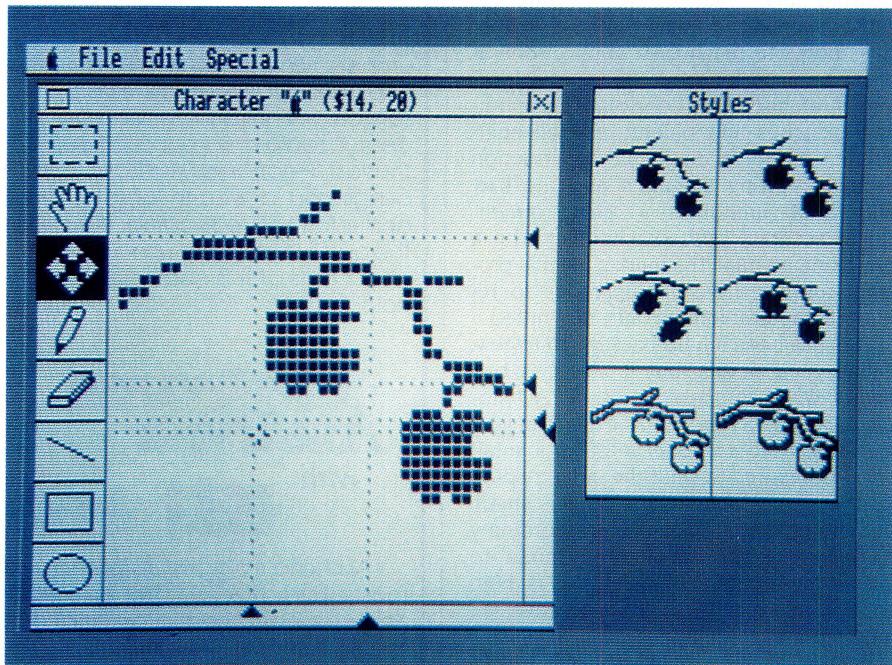
GS Font Editor

The GS Font Editor also runs on the IIe and IIC computers, even though its title suggests IIGS only. In fact, a glaring omission from the manual is how to make a IIGS color monitor operate with this pro-

gram. If, like most IIGS users, you have your monitor set to 'color' in the control panel, all you will see when you boot GS Font Editor is a screen full of blurry colored images. The trick is to set the monitor to 'monochrome' in the control panel.

A font editor is really only a graphics program, as IIGS fonts are stored as bit images much the same as a graphic. The difference is that the font manager in the IIGS knows what to do with the bit images because they correspond to various ASCII codes. Thus, anyone with experience using IIGS graphics software will feel quite at home with GS Font Editor. This program has all the features you would expect of any graphics software, including an eraser, drawing pen, edit box (to clipboard), a hand to move the image in the window, and so on.

The program is very easy to use, and creating a letter, symbol, graphic and so on, is simply a matter of placing or deleting a pixel. The program is supplied on both a 3½ inch disk, and two 5¼ inch disks, along with a manual that I found rather lacking. For example, I am still not quite sure what they mean by the 'ascent control', and the writing style seems to concentrate more on being light hearted than informative. The disks are not copy protected, and the program runs well from a hard disk.



Font Editor GS is an easy way of creating font files that contain characters or graphics that specifically fit your needs. Just remember to set the monitor to monochrome in the control panel, otherwise the display is just a colored blur.

A good use of a font editor is to create symbols in place of unwanted characters.

A good use of a font editor is to create symbols in place of unwanted characters. For example, a musical symbol can be created that corresponds to the ASCII code for the square bracket key. This character will then appear if the font containing the symbol is selected, and the square bracket key is typed. And, because the symbol is part of a font, it will be

scaled according to the selected point size. While a character or symbol is being created on screen with GS Font Editor, a window on the right of the screen shows how the character will appear in bold, italics, underline, shadow and inverse. The font size can be anything from one to 127 points, and up to 255 characters can be stored as part of a font file. The character being edited or created is displayed along with its ASCII code (in both hex and decimal), although codes \$00 to \$1F should not be used, as these are usually printer command codes that can cause havoc if used indiscriminately.

It is not possible to print newly created fonts from GS Font Editor, and a test print can only be done via other software that uses fonts. The program is well structured, extremely friendly and despite my reservations about the manual, is a most useful, even essential, package. It's priced at \$69.95.

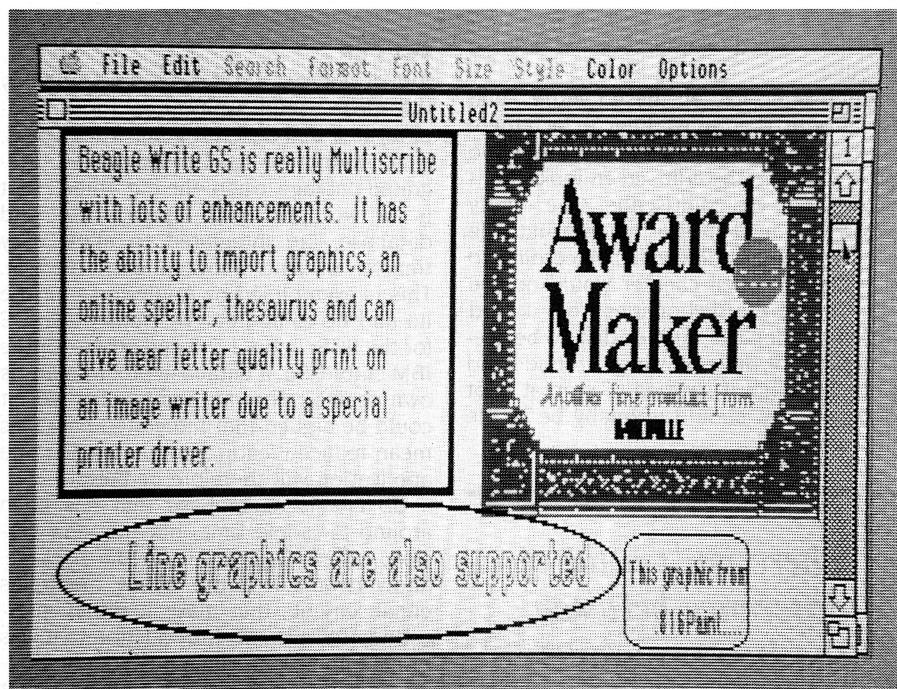
*Like Multiscribe,
BeagleWrite GS is a fully
featured wordprocessor,
with all the usual bells
and whistles.*

By STEPHEN T. KELLY, Volume 3, Number 1

BeagleWrite GS

WHEN I FIRST purchased my IIGS, I also selected Multiscribe GS as the wordprocessor to go with it. Then Claris brought out Styleware, the developers of Multiscribe, and proceeded to complete and market Appleworks GS, which was under development by Styleware at the time. So what about Multiscribe? Well, it seems Beagle Bros bought that, and now we have the all new Multiscribe under the title of BeagleWrite GS (review version was V3.2). So, what's new in this package over the old Multiscribe? Not a lot, but as Multiscribe was such a powerful program anyway, it is no wonder.

Although I find graphics based word-processors slow, and not really my cup of tea, I have to admit that the facilities available are incredible. Changing font styles, fonts, point sizes and print enhancements are a piece of cake, but when these features are coupled with the ability to easily import a graphic, it's no wonder



BeagleWrite GS is much the same as its predecessor Multiscribe. It can import graphics from most IIGS graphics programs, allows line drawings and has a thesaurus and dictionary. It imports Appleworks documents directly, and features a printer driver that gives near letter quality print.

File Column Select Sort Options Print Views					
	Roll No.	Title	Slide Show	Form	OF
			Sound Show	List	AL
1	67713	Desert	Movie		
2	59205	Sally	Preview Picture		
3	67343	Oh Kay	Preview Sound		
4	63403	Bouquet	Select Picture File		
5	65843	Musical	Auto Capitalize		
6	67073	Pirate	Grid On/Off		
7	211841	To Be	Repeat Data Entry		
8	204871	What's	Field Info		
9	211911	Miss You	Confrey		
10	205811	Honest	Carroll		
11	206251	Are You Sorry			
12	203631	Oh! Harold			

GS File by Softwood is a database that can import Appleworks files directly. By creating a database with sound and picture fields, GS File can also produce slide shows or movies from existing graphics and sound files.

graphics based wordprocessors are so popular.

Multiscribe had all these features, and Beaglewrite GS retains them. In fact, there isn't a lot of difference between the two programs, and the edit screen looks identical to the old Multiscribe. One oddity was a comment in the 'readme.first' file concerning hard disk users. According to this file, the spell checker would not be able to use the dictionaries from a hard disk, requiring the utilities disk to be present in a disk drive. However, I found it did work, although it seemed to stop at a lot of words that should normally be in the dictionary.

There isn't a lot of difference between the two programs, and the edit screen looks identical to the old Multiscribe.

Like Multiscribe, BeagleWrite GS is a fully featured wordprocessor, with all the usual bells and whistles. The utilities disk includes color pallets so graphics can be drawn in your favorite paint program, then imported without a color change. The manual is extensive, although I didn't like the description for installing the program onto a hard disk. I simply created a new folder, and dragged everything except the system and ProDos files into the folder. According to the manual, I should have updated all sorts of system files from the supplied disks, which when further examined, were older than those already on my hard disk.

I also wasted a lot of time with (I thought) a companion program called BeagleWrite Desk Accessories. After fruitless attempts, I finally read the fine print which stated that the Desk Accessories were for the IIe and IIC only. Don't get caught, this program only runs with BeagleWrite, not Beaglewrite GS. You will need at least 768K of RAM for BeagleWrite GS, though 1.25Mb is recommended if you want the spell checker facility. BeagleWrite GS costs \$144.95, is supplied on two non-protected 3½ inch disks.

GS File

APART FROM wordprocessing, probably the most useful application for a computer is a database program. These days, it is common to have the so called integrated package, where the big 'three', that is, a wordprocessor, spreadsheet and database, are integrated to allow easy transfer of data between each module. This is exemplified by Appleworks for the IIe and IIC computers, by Appleworks GS for the II GS, Lotus 1-2-3 and others for the IBM stable. So, a database program on its own seems rather an oddity. However, it could be argued that integrated packages mean reduced features, and a standalone application will therefore be better.

GS File is a database that has been around for some time, but this new version, called Version 2.0 on the package, and version 2.01 in the 'about' menu has enhancements that make it rather interesting. However, my introduction to it was rather unpleasant, due to its incompatibility with System 5. All attempts to run it from my hard disk failed, probably because GS File wants System 3.1! The manual makes no mention of using a hard disk, and I wasted quite a bit of time before giving up and reverting to booting it from a 3½ inch drive.

Once up and running, my first test was to see if it could read an Appleworks file. The manual makes scant reference to this feature, but additional notes supplied with the package gave more help. The process is quite easy, and I eventually had a large Appleworks database file on display in GS File. It took around five minutes to process the file, which was much longer than Appleworks GS when it was given the same test.

But the feature of GS File that makes it interesting is its ability to store Picture and Sound files. What use is that? Quite a lot in fact. Let's say you have spent the last six months drawing lots of wonderful graphics in a range of paint programs. The only way you can view your work is to select each graphic in turn once you're in the particular paint program. But no more. GS File has a data field type called Picture. The idea is to create a database by entering the pathname, name of picture file and so on, into the database. This is very easy to do, as the options menu will not only allow you to preview each picture, but to select the file name with the mouse. Hitting return, or selecting 'open', then inserts the complete pathname into the database. Once all the selected graphics

are entered, it's an easy matter to have each graphic displayed in sequence by selecting 'slide show'. It all works very smoothly, and is a great way to show off all those graphics.

The sound feature is not quite as easy. It only works with digitised sounds, such as those recorded via a digitising card. I have several digitised sounds on my hard drive, but previewing some of these caused the program to hang. However, I'll put this down to inexperience with the program and problems with System 5.0. According to the extra notes supplied, it is possible to have graphics and sounds combined as a movie. This causes graphics to be sequenced and displayed for around five seconds, along with accompaniment as selected by the entry in the 'sound' field.

GS File also supports a limited range of calculations giving spreadsheet features to the database.

There are other features in the program, including the ability to print a picture and to save files as ASCII data for use in a wordprocessor that supports ASCII data entry. This way, information from the database could be used in a mailmerge application. GS File also supports a limited range of calculations giving spreadsheet features to the database.

It's a nice program that is easy to use, but one I have a few reservations about. The manual is very outdated, and the updates to the program have not gone far enough. Its incompatibility to System 5.0 is a worry. Also, it only allows one file to be opened at a time, which is very restricting. The program went into limbo several times, and could only be rebooted after actually switching the computer off and waiting the obligatory 20 seconds. However, the slideshow feature is good, and GS File works well as a general purpose database. The program is supplied on one 3½ inch disk that is not copy protected and is available for \$149.95. All three programs are distributed by Dataflow (02) 331 6153. □

THE FORTH COLUMN



ROY
HILL

Some interesting words

ONE OF THE most interesting facets of 'The Forth Column' has been the ability to make introductions between various members of the Forth community. Often, I have received letters from a person asking for a particular item (or a variety of Forth) and virtually in the same mail, I have received a letter from another person, telling me that they are doing exactly what the first person was looking for – so keep those letters coming in. Incidentally, whilst on the subject of letters, the editor of YC has told me that this column receives the third most letters of all of the columns. This, I think, is an astounding response to Forth, which has nowhere near the following that C, Pascal and Basic have. Another thing that never ceases to amaze me is the uses to which Forth is being put. If you have a concept or an application that you would like to share with other users, please write and tell me.

A number of readers from South Australia would like to know if there is a FIG (Forth Interest Group) chapter in SA, if you can help, please let me know.

F-PC

I HAVE BEEN writing letters to Mark Smiley (one of the F-PC team), who informs me that F-PC has now reached version 3.5. Ken Curry (owner of Brisbane-based Energy Control and a long-time supporter of both Forth and YC) is making a trip to the US and I have asked him to pick it up on my behalf. I'll let you know what transpires. Incidentally, my reason for talking with Curry is that I discovered a small bug in one of Smiley's FORTH graphics routines that operates under VGA. Here is Smiley's reply –

It's nice to hear from someone so far away. Sorry to hear you had trouble with VKAL. I am sending you a vastly improved set of my graphics routines in the file SMILEY.ZIP.

Due to legal reasons, everyone over here has switched from the .ARC to the .ZIP format. SMILEY.ZIP has only been tested with F-PC v3.5. If you haven't yet obtained a copy of this version, I strongly urge you to do so. But just in case, I'm sending you a copy of FLSEL225.SEQ, which is the ver-

sion of FILESEL.SEQ (needed for recalling graphics files) to use with F-PC v2.25. As far as I can recall, every other file should load fine with v2.25. Of course, I could have forgotten something.

Let me know if you encounter any other problems with the graphics package. I appreciate all feedback – good and bad. I would also be interested in a copy of any programs written by others that use my graphics routines – I enjoy fine graphics. VKAL.SEQ is now in VGAAPP.ZIP (within SMILEY.-ZIP). I think you'll find that it has improved a bit, and I have finally cleaned up the comments. I hope this straightens things out.

The ever vigilant Gary Luke has spotted a mistake of mine in my discussion on Prefix and Postfix assemblers. I mangled the description of prefix assemblers used in F83, and apologise for any inconvenience.

Beginners' section

IN APRIL'S column, I discussed how to manipulate data on the stack, and showed some simple mathematical operations on numbers which had been placed on the stack. This month, I would like to extend that further and discuss some Forth words that operate on numbers which are already on the stack. One of these words is SWAP, which we used in April, in our definition of 'S.' (S-period). SWAP simply reverses the position of the first two items on the stack – the second becomes the top item and the top item becomes the second. Try it with several numbers and see how it operates. Use 'S.' to examine the stack, both before and after SWAP.

Another word that is extremely useful is DUP. This word simply duplicates the item on the top of the stack, so the second item on the stack is an exact copy of the top item.

The next word that we will try is ROT. This word is used to rotate the top three stack items. That is, the third item comes to the top of the stack, the top item becomes the second and the second item becomes the third. Once again, try it out using 'S.'

Another useful word is OVER, which puts a copy of the second item on the

stack onto the top. This is illustrated by –

2	3	4	5	CR
S.	CR			
TOP				
	5			
		4		
			3	
				2
BOTTOM				
OVER	CR			
S.				
TOP				
	4			
		5		
			4	
				3
				2
BOTTOM				

– as can be seen, a copy of the second item has been placed on the top.

The word PICK can be used to retrieve an item from anywhere on the stack. PICK requires a number (the depth of the item that is required) to be supplied prior to its execution. Suppose the stack looks like –

TOP				
	8			
		7		
			6	
				5
				4
				3
BOTTOM				

– then, 0 PICK would return 8, 2 PICK would return 6, and 5 PICK would return 3.

For homework, try writing a routine that does the reverse of ROT (called -ROT, for example), using only the above words. -ROT should rotate the stack backwards, so that the second item becomes the top one, the third becomes the second, and the top item becomes the third. (Hint – it only needs one of the above words used twice.)

IBM UNDERGROUND



JOHN
HEPWORTH

MANY READERS of this column are also avid users of bulletin boards. These are probably the cheapest and most convenient way to get copies of new public domain and Shareware software. But, while new users of bulletin boards will concentrate on downloading software and later uploading some, experienced users have other things in mind. They tend to use bulletin boards so that they can take part in echo-mail conferences.

So what is echomail? Log onto a bulletin board and you are almost certain to find, on the main menu, an option to go to the message areas. There will be several message areas, each with a series of messages on a general theme. There may be an Australian Technical area, an Interna-

If you have a programming glitch that you can't solve, put a message on your local bulletin board and wait for users all over Australia (or all over the world) to reply.

tional Telix area, or many other international or Australian message areas. Go into one of the areas and you will find dozens of messages, all covering subjects related to the title of the area. Some will be one-off messages, and others will be a series of messages where one user posts a message, another replies to it, and others in their turn have a say.

It's a beaut way to solve a problem. If you have a programming glitch that you can't solve, put a message on your local bulletin board and wait for users all over Australia (or all over the world) to reply. Each day the various boards ring each other and pass on new messages. In just a

Silver Xpress

Silver Xpress Configuration Session

A) Full Scr Editor	xpedt.exe
B) Expansion command	LET XPRESS FIGURE IT OUT - see archive.cfg
C) Compression command	LET XPRESS FIGURE IT OUT - see archive.cfg
D) Optional Mail Path	
E) Optional Reply Path	
F) Optional Work Path	
G) Signature	
H) When to Quote	PROMPT
I) Quote String	
J) Quote Width	69
K) Message Width	88
L) Wrap Width	72
M) Message Lines Limit..	150
N) Seen By	NO
O) Turn Mail Sort On ...	NO
P) Printer Port	LPT1
Q) When FormFeed	AFTER
R) Save Read/Reply Tag..	NO
S) Video Configuration	
Z) Save/Exit	

Press A-Z or use the Up/Down Arrows and Press ENTER.
Press F1 for HELP on the Specific field. Escape to Exit.

Using Silver Xpress, you can scroll messages within a window while vital details are in status lines at the top and bottom.

couple of days, your query will be on every bulletin board in the world that carries the particular message area. And, within the next few days, there will be answers from around the globe.

Keeping track of the messages is a problem because they are in the order that they arrived at the board. The threads of the different conversations will be interwoven, and sometimes the messages in a thread will be out of chronological order. Following a series of replies to a question, or a string of messages that form a conversation, is tedious. It also ties up a bulletin board as a user browses messages, and composes replies online.

What is needed is a way to select messages on a board, bundle them together, compress them with a PKZIP, LHARC or ARC program, and download them to a user. Then software on the user's machine can unpack them and sort the messages by conference and subject. They can then be read, and with a keystroke call a favor-

ite editor to compose a reply. And, then log on again and upload the replies.

The solution is a Shareware product called Silver Xpress. Your favorite board must have Xpress Mail to collect messages, bundle them and download them to the user. It also takes bundles of replies and new messages uploaded by users, separates them and puts them into the various conferences for transmission around the globe. The user needs the Silver Xpress Off-line Reader to read messages, prepare replies or new messages, and bundle them ready for upload to the board.

BBS Xpress Mail

THE WAY to start Xpress Mail on your favorite bulletin board will depend on the way your Sysop has set up the menu system. After Xpress Mail starts, the first thing seen is its main menu – this has five options, starting with configuration. Messages to be bundled can be all messages

in one or more conferences, messages selected by keywords, and messages personally addressed, and this is selected from the configuration menu. Also part of the configuration process is the file compression method to be used such as .LHZ or .ZIP, and the download protocol to be used such as ZModem, XModem or Sealink. Each user's configuration is remembered from session to session, and can be amended by the user at any time.

There are other options on the Xpress Mail main menu. Download Messages bundles, compresses and downloads messages. Upload Replies receives mail bundles from the user. Help and Quit are self-explanatory. Users control Xpress Mail on the BBS via a conventional communications program like Telix, which is also used to upload and download message bundles.

Silver Xpress Off-Line Reader on the user's machine is the vital partner to the Xpress Mail program on the BBS. When it is first run, the user must configure it to indicate the directories for downloaded message bundles and for uploading bundles. The user also selects the editor to use for entering messages or replies – a programmer's editor or wordprocessor that creates ASCII files but word-wraps lines, such as QEdit, Norton Editor or PC Write, is ideal. There are many other

characteristics that can be customised to suit the user's preferences, but the defaults built into the Xpress Reader work pretty well, and most users won't change them until they have used the program for a while. To make this easy, the configuration function can be reached from the Xpress Reader menu at any time.

The first thing that Xpress does in later sessions is to look into your designated download directory. If a message packet is waiting for you there, it is loaded. Otherwise a list of available message packets is shown for selection. Next appears the welcoming screen from the BBS, and then a list of new files available for downloading. Finally, the menu is seen. The options are Load Mail Packet, Read Personal Mail, Join Message Area, Enter New Message, Modify Replies/New Mail, Kill Relies/New Mail, File Request (registered version only), Dos Shell, and Welcome Screens.

To read a series of messages in a particular area, choose Join Message Area. First a list of the message areas in the message packet are shown. Move a reverse video highlight bar down over the name of a message area and press Enter to select it. Xpress then extracts all the messages in that message area, and sorts them firstly by subject and then by date, so that all threads in a conversation are together and in chronological order. Then it displays a

list of the messages in the area, showing the author, the addressee, the subject of the message and the date and time of its creation. Several of these will be visible on the screen at a time, but since there may be a few hundred messages in an area, using the cursor keys quickly scrolls through the list.

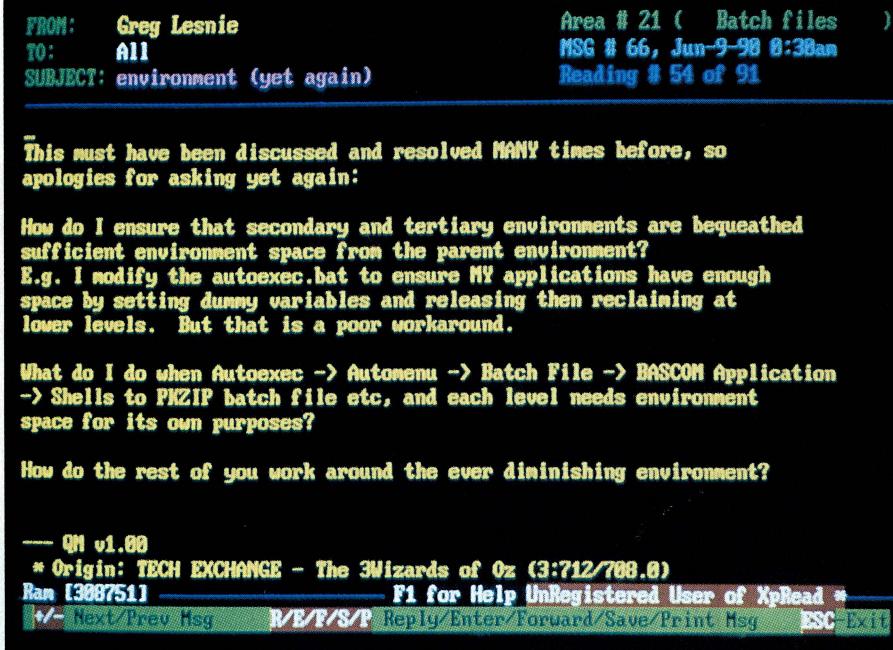
With the cursor over the details of the desired message, press Enter and the text is displayed. At the top of the screen are three lines in which is shown the name of the sender of the message, and the name of the person to whom it was sent. Also shown here is the number and name of the message area, the message number, date and time, the subject of the message, and finally, the number of messages in the area. At the bottom of the screen are prompts for the various actions that are possible, while in between is the message. If the message is too long to fit in the space, the cursor keys are used to scroll through it, while to go to the next or the last message the gray-plus and gray-minus keys are used.

Now, back to the prompts at the bottom of the screen. The functions that are available while reading a message are Reply, Enter, Forward, Save and Print. Pressing R for Reply starts your editor ready to create a reply. One of the options allows the existing message to be loaded into the editor first, so that quoting from it is easy. After saving the message from the editor and exiting, Xpress puts the new message into an upload bundle ready for the next time you call the board. New messages can also be created. Save writes the message out to an ASCII file (which is good for archiving a series of interesting messages), and Print sends the message to your printer.

I now do most of my echomail conferencing on a local user group bulletin board that has Xpress as an option. It has made replying to messages, or posting new ones, much easier. From the bulletin board side, it frees up the board and makes it accessible to more users.

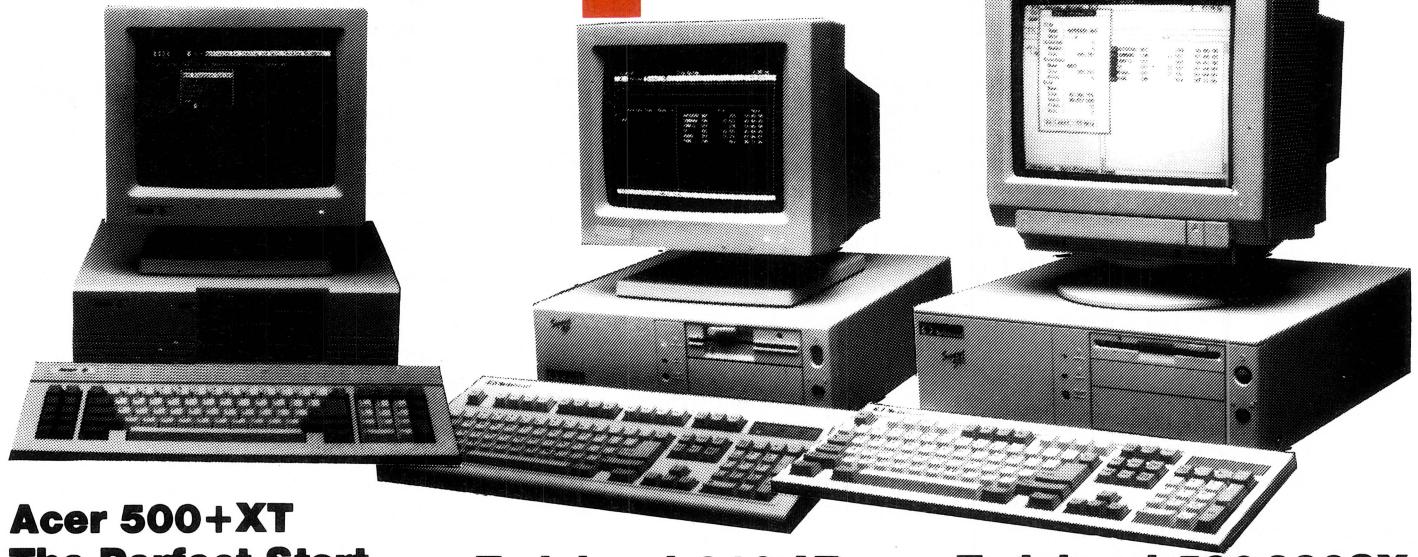
If you want to use Xpress, look around the bulletin boards in your area. Find one that supports Xpress, and also that has conferences that interest you. Then download a copy of the Xpress message reader that matches the version on the board. If your favorite board does not support Xpress, see if the Sysop is willing to add it.

Silver Xpress is a product of Santronics Software, and registration is US\$35. □



Silver Xpress configuration screen options give the user complete flexibility.

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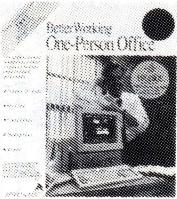
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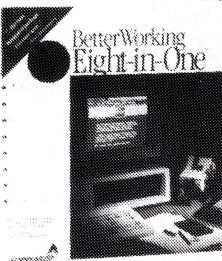
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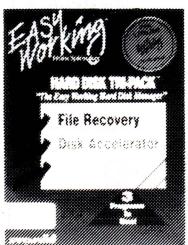
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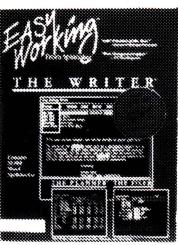
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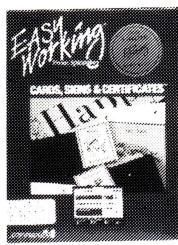
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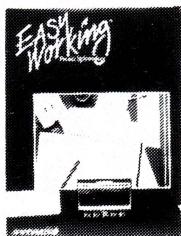
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**GREGG
FAULKNER**

THE SYSTEM software architecture of the Amiga can be a nightmare for new owners. Even a simple task like choosing the correct printer, through preferences, can become reason for contemplation of 'suicide'. Part of the cause is Commodore's uniquely awful owner manuals, but the primary cause is the Amiga's combination of user environments.

Owners of MS-Dos PCs have long resigned themselves to the fact that they must learn to use Dos commands to do anything with their machines. At the other extreme, Macintosh owners expect to be able to do everything from their 'point and click' world. The Amiga offers its owners both of these options. The difficulty arises when the new owner is not clear on which approach is appropriate for a particular task.

Once a WorkBench disk (or a hard disk drive for the fortunate few) has been tailored to your requirements, the going is easy. The problem lies in performing the tailoring, and without it, the going is anything but easy.

The key point, which the new Amiga owner is usually unaware of, is that only a small part of the Amiga's file structure is visible from the WorkBench. Most of the files necessary for correct functioning of the Amiga are contained within directories (drawers) without icons, and therefore not visible from the WorkBench.

This would be fine if Commodore made adequate provision for unskilled users to perform the necessary initialisation and setup tasks from icon-driven processes. With the new facilities in version 1.3 of AmigaDos, a complex series of Dos commands can be fired off simply by clicking on an icon. Sadly, beloved Commodore have failed to support their new purchasers in this regard.

miga night

Though I have to admit that with version 1.3 they are at least supplying a manual which refers to Dos commands.

Let me try to remedy the situation to some small degree by removing some of the mystery from these 'hidden' structures. The WorkBench 1.3 disk contains the icons Shell, Expansion, Utilities, Prefs, System, Empty and Trashcan. Of these, all but Shell are Drawer icons representing directories containing sub-directories and files, with the exception of Trashcan which is initially empty. The Shell icon belongs to a process which opens the CLI (Amiga-Dos) window.

There are several other directories which are not visible from the WorkBench. These are C, Devs, L, Libs, S, T and Fonts. In fact, the hidden directories contain more than half the total volume of the disk. Let's take them one at a time and examine their functions.

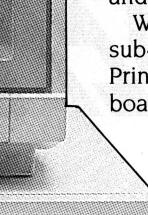
The directories

THE C DIRECTORY is the repository for all the files which provide the AmigaDos (CLI for 'command line interface') commands. Each of these files is a set of machine code instructions, called 'executable', which can be immediately carried out by the Amiga's central processor. When a CLI command is typed into the CLI or Shell window, the operating system 'looks' into the C directory for a file with the same name. The file is then loaded into memory and control of the machine is passed to the first instruction of the file.

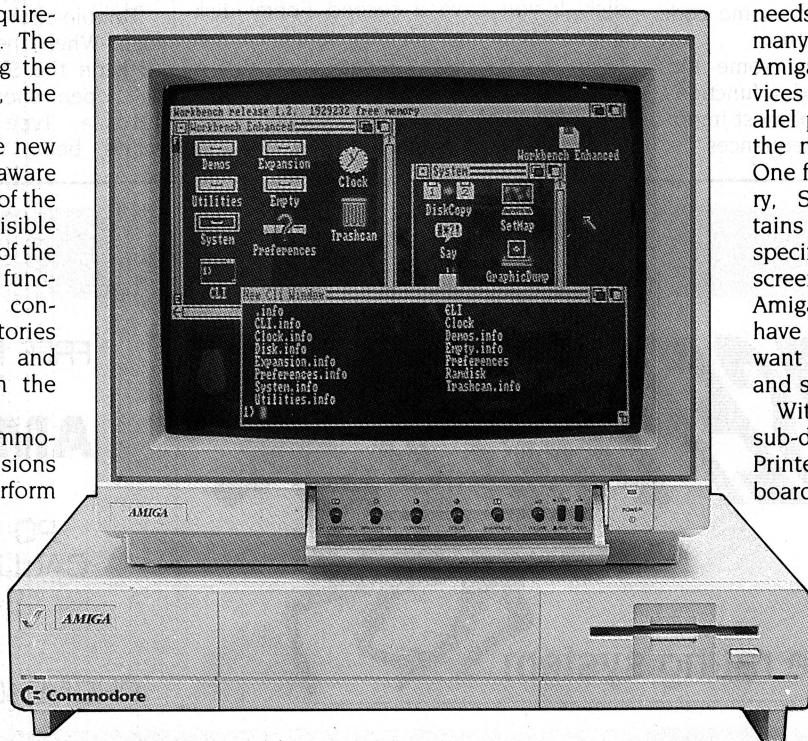
The standard version 1.3 C directory contains 64 files. Among these are files called Date, Info and Status, which make interesting tests for your first venture into the CLI or Shell window.

The Devs directory contains a number of files which have the suffix .device after their names. These files contain informa-

then names. These files contain information that the operating system needs in order to access the many devices used during the Amiga's operation. These devices include the serial and parallel ports, printer, memory and the narrator or speech facility. One file within the Devs directory, System-configuration, contains all the information you specify in the Preferences screens. From this file, the Amiga learns which printer you have selected, what colors you want on your WorkBench screen, and several other things.



Within Devs there are three sub-directories, called Keymaps, Printers and Clipboards. Clipboards is of minor importance as it is primarily used by the notepad facility. Keymaps is more important as it contains the variety of different keyboard layouts which can be selected when using the Amiga for foreign languages, or even for setting it up as a Dvorak keyboard. The most important of the sub-direct-



Owners of MS-Dos PCs must learn to use Dos commands to do anything with their machines. At the other extreme, Macintosh owners expect to be able to do everything from their 'point and click' world. The Amiga offers both.

tories is Printers. In this directory the translation files, called printer drivers, are stored, and enable the Amiga to communicate with the many different types of codes used by a wide variety of printers.

The standard WorkBench 1.3 disk has only a single file, called Generic, in the Printers directory. This 'driver' will permit simple text to be output to most printers, but special functions such as bold, underline or graphics will not usually work. In order to get the Amiga to talk to your printer using the correct codes, you must place the correct printer 'driver' file into the Printers drawer (I'll come back to this a little later).

The directory called L contains a lot of files called -handler. These files enable the operating system to make use of facilities such as speech, communication between tasks, and access to the display screen or monitor. The L directory also contains the disk validator file which performs the task of checking that a disk inserted.

The Libs directory contains a set of files with names suffixed with .library called obscure things like Mathieeedoubtrans. These are sets of machine code functions the Amiga operating system looks up, when necessary, during the operation of a program. Having these standard sets of functions stored in a library saves the programmer from including the same code every time a program is written.

The S directory contains some files used by the CLI or Shell window functions, called Spat and Dpat, and of most importance, files called Startup-Sequences.

When the Amiga is first started, or restarted using Ctrl-A-A, the operating system looks on the system disk for the S directory. Having found an S directory, it looks for a file called Startup-sequence and loads the file into memory. Now, the Startup-sequence file is treated like a series of AmigaDos commands that instruct the Amiga how to set up its initial working environment.

Finally, we come to the T directory. This directory is simply used as a temporary storage place for tasks in progress, and is usually empty.

But, let's get back to the Devs directory, and more precisely, to the Printers sub-directory. I mentioned earlier that in order to make proper use of any particular printer you need to place the correct printer 'driver' file into the Printers directory. But how do you do this?

It should come as no surprise to any Amiga owner to be told that if you follow the instructions in the owner's manual carefully, you will get absolutely nowhere. Commodore deserve to be crucified for the garbage they have passed off as a user's manual.

The Extras disk, which is supplied with your Amiga, contains a Printers directory full of printer 'driver' files. What you need to do is to copy the particular file you need, from this disk to your WorkBench disk. If you have a second floppy disk drive, this process is very simple. If you have only the inbuilt floppy drive, it is a little more complicated, but nothing I can't describe in a couple of lines.

If you haven't already done so, make a

copy of your WorkBench disk. The easiest way to do this is to place your WorkBench disk into the internal drive of your Amiga, place the cursor on the WorkBench disk icon and click the left mouse button once. This will select the disk. Now, hold down the right mouse button and keep it held down while you find, and highlight, the Duplicate command in the WorkBench menu. With the Duplicate command highlighted, release the right mouse button. Now, follow the instructions to produce a copy of your WorkBench disk.

When you have completed the copy process, select the disk icon of the Copy of the WorkBench disk, and select the Rename command from the WorkBench menu. When the requestor window opens, use the Delete key to remove the 'Copy of' from the front of the name. Make sure you also remove the space before the word WorkBench. The cursor block should end up on the character W. Now, press the Return key.

Press the Control key and both the Amiga keys together. This instructs the Amiga to perform a 'warm bootup' or restart the process. After a couple of minutes your Amiga will display three disk icons on-screen – one for the RAM disk and one each for the WorkBench and Extras disks.

Double-click on the WorkBench disk icon. When the window opens, double-click on the Shell icon. Now, a window will open showing a prompt such as I.SYS:>. Type in the following command, being very careful to only put



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spaces in the same places I do –

Copy DF1:Devs/Printers/EpsonX[CBM_MPS-1250] to DFO:Devs/Printers

– and press the Return key. Make sure you double-check your typing *before* pressing the Return key. The rest of the process is as for single drive owners, so skip a couple of paragraphs and continue where we close the Shell window.

Single drive owners have to make use of the RAM disk as an intermediate step, so the process is slightly more complicated.

If you haven't already done so, make a copy of your WorkBench disk as described above. Put the WorkBench copy into the disk drive and press Ctrl-A-A as described above. Your WorkBench screen will show only two icons – one for the RAM disk and one for the WorkBench disk. Double-click on the WorkBench disk icon, then double-click on the Shell icon. At the I.SYS:> prompt, type –

Copy sys:c/copy to ram:

– and press the Return key. Now type –

Path RAM: add

– and press the Return key. Take the disk out of your drive and place the Extras disk into the disk drive. When the drive light has gone out, type the following line exactly –

Copy DFO:Devs/Printers/EpsonX[CBM_MPS-1250] to RAM:

– and press the Return key. Wait for the disk drive light to go out, then eject the Extras disk and place the copy of WorkBench back into the drive. Type –

Copy RAM:EpsonX[CBM_MPS-1250] to DFO:Devs/Printers

– and press the Return key. You have now copied the EpsonX printer drive into the correct directory of your WorkBench disk.

You can now close the Shell window by typing EndShell and pressing the Re-

turn key. Double-click on the Prefs icon, and then double-click on the Printer icon. When the window opens, click once on the Parallel icon, and then on the up or down arrows to highlight the EpsonX[CBM_MPS-1250] printer name.

Click on OK and then on Save, and your choice of printer will be saved for future use. You may still need to adjust the printer page length, paper width and color settings as described in the user's manual. Just remember that these instructions are for owners of Epson X-type printers, or compatible printers such as Star NX-1000 and Fujitsu 9-pin printers. Owners of other printers will have to substitute the name of the appropriate driver file wherever I have specified EpsonX[CBM_MPS-1250] in the above instructions.

It should come as no surprise to any Amiga owner to be told that if you follow the instructions in the owners manual carefully, you will get absolutely nowhere.

But, above all, make sure that you attempt modifications *only* on a *copy* of your WorkBench disk. The original disk should be stored in a safe, cool place away from magnetic fields and electrical devices.

Puritans will probably be dismayed to note that I addressed the disks by their device name (DF0: and DF1:) rather than their volume names (WorkBench 1.3 and Extras 1.3). I did so to avoid the additional confusion caused by the need for double quotes around volume names containing spaces.

Honestly, if the pack of salespersons who pass themselves off as Commodore, set out intentionally to make life confusing and difficult for a first-up Amiga owner, they couldn't do it any better. Why on earth they should call the two initial-use disks WorkBench 1.3 and Extras 1.3 instead of WorkBench 1.3 and

Extras 1.3, or even better, just WorkBench and Extras, I don't know. Then to compound the problem, they give the most commonly used printer driver a typographically nightmarish name like EpsonX[CBM_MPS-1250]. One could be forgiven for thinking they might have set out to torment their customers intentionally.

However, that's not quite true – I think I have a pretty good idea of the reason. I think they remain blissfully unaware of the problems. I don't think the executives of Commodore have ever used an Amiga – at least none that I've met, and that list reaches to the top of the Australian organisation. Nor do the Commodore executives give any indication that they have a user's idea of what the Amiga is about. They'll talk about icon-driven interfaces and user-friendliness until the cows come home, but they are only words. I really don't believe these guys, and woman – sorry Ms Parkinson – have ever bothered to sit down for a couple of hours to see what it's like to be a first-time Amiga owner, opening an Amiga 500 starter kit and trying to get the damned thing running.

If they had tried, we'd be finding a user manual which makes sense and some icon-driven set-up procedures to help ease the new owner into a comfortable use of the machine. Much as I hate to have to admit it, Commodore could take a huge lesson from Apple in the way they look after their customers.

But, don't get the idea that domestic Amiga purchasers are being ignored in favor of business purchasers. If anything, business purchasers are even worse off. To them, time is money. They can't afford to have a new \$5000 machine sitting useless for days while someone works out how to get it talking to their particular printer. What sort of support do they get? You guessed it, exactly the same as you or me – nothing.

Until the heavies at Commodore get their heads out of the clouds and start to take a look at some of these nuts-and-bolts issues, any ideas they might have of being a serious contender in the business computer arena are just pipe-dreams.

It's not as if they haven't been told. I've been pushing this barrow for the past three years, in print *and* in person.

With the release of the Amiga 3000, a potential Mac II killer, I hope for better things from Commodore – only time will tell. □



JOHN
BAILEY

THE VAST RANGE of herbicides available to farmers can be confusing. In some cases this leads to the situation where we say 'the heck with it, I'll use a few more mils per hectare and make sure I get the lot'. This can be expensive and may even lead to residue problems in the crop.

A piece of software has been created to help utilise the precise qualities of many of the herbicides available today. The software is called HerbiGuide and has been designed by John Moore and his son Corey, of Albits in Albany, WA. Moore is also employed by the WA Department of Agriculture as a plant research officer, and I have a feeling that some of the impetus that drove him to become involved with HerbiGuide was due to the vast range of queries he received in regards to the uses of herbicides.

HerbiGuide is one of those rare programs that could easily dispense with a book with the exception of a couple of points.

The program is a computerised herbicide selection program to assist with the control of weeds in crops and pastures. The program was developed for use by farmers, consultants and advisors in WA, however, it can be used Australia-wide provided differing state legislative constraints are observed.

The information provided by the software includes application rates as laid down on labels or as determined from the Department of Agriculture's experiments. Alternative application rates and techniques are also displayed. These alternative strategies, which may not have been officially sanctioned, are included as a

guide to the sort of options that may be available in dealing with difficult weed situations.

Other details are included such as costs per hectare of the various rates described, application restraints, conditions affecting results, rainfastness, withholding periods and approved methods of application, which may influence the choice of herbicide. The program offers a selection of 20 crops, 88 weeds and 85 herbicides. However, there is a limit of four crop plants and six weeds in any report, but the options with even one crop type and several weeds can be pretty varied and difficult to research using only books. The manual recommends that we start with one weed and one crop and expand the numbers of weeds to arrive at the most acceptable herbicide.

The latest version of HerbiGuide comes on six disks (360K) each. The reason for the extra disk is due to the inclusion of, firstly, a program that copies the main program and data files to the hard disk and, secondly, an editor to relay the information to clients of extension services and contractors. The rest of the disks contain picture files which have been transcribed from various texts and provide a check for users to ensure that the target weed is correctly identified.

I have to admit that I have only very recently read the HerbiGuide manual. It is one of those rare programs that could easily dispense with a book with the exception of a couple of points. Firstly, the subject of the system is a very complex and technical area. The people using HerbiGuide are skilled spray operators and have a keen interest in precise application of herbicides to provide efficient results. In view of this, the manual includes forms that can be filled to suggest changes to the technical content of the program as well as the usual remarks regarding presentation and interface difficulties. The second important reason for having a manual is that the key-strokes needed to bring up weed pictures and descriptions are not shown on the monitor display menu.

The weed pictures are scanned from

various texts (with the permission of the authors and publishers) and provide an outstanding reference for positive weed identification. In many cases, the plant picture is derived from several sources to make identification more certain. These pictures may be printed to most Epson or IBM emulating printers with the exception of my Star NX-15 which was keen to work but made a mess of it.

It is a joy to see software that is inventive, fills a direct need, works smoothly and is a comfortable tool to use.

Where the user is a farm advisor, extension officer or spraying contractor and the weed description needs to be relayed to a client by mail, then it would be important to ensure that the printer will work. I am convinced that the NX-15 can be made to reproduce the plant pictures, but it may take some extra lines of program code.

Of course, pictures may well be worth a thousand words, but when one is looking at a crop weed, the plant must be described in terms of its agronomic importance as well as its appearance. Thus, the pressing of F2 yields a complete verbal description of the weed in question and F1 provides alternative and botanical names of the weeds listed. The verbal description mode is handy if you're acting in an advisory role over the telephone and as an adjunct to the pictures. I cannot stress too strongly the importance that the Moores place on making the correct identification of a weed and thus ensuring the correct chemical application. I remember very clearly an incident where experienced foresters were spraying an arboretum for weeds after seedling trees were planted. The chemical used was Diquat which is a specific desiccant that kills broadleaf weeds and so all the eucalypts had a tube

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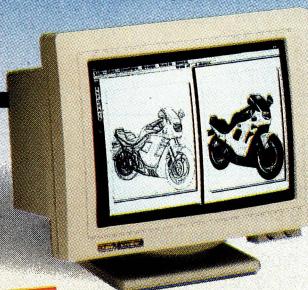
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Contributions from the Chemical Companies and the State Departments of Agriculture are gratefully acknowledged.

SBIS RURAL in Albany have supplied "member prices" that were current on 1/12/88. These are often cheaper than elsewhere. Phone (098) 418422 for current quotations.

Hit any key to continue

HerbiGuide includes details such as costs per hectare of various rates, application restraints, conditions affecting results, rainfastness, withholding periods and approved methods of application, which may influence the choice of herbicide. The program offers a selection of 20 crops, 88 weeds and 85 herbicides.

placed over them prior to spraying. However, the pine trees were not covered. The foresters believed that the pines were unaffected by the chemical because they did not have 'broad' leaves. Naturally, all the pine seedlings died.

The HerbiGuide program in its latest form includes a text editor with a form letter for advisory people to use. This letter reminds the client to read the label on the herbicide package and to follow a safe practice by testing the results where mixtures and or trial rates are used. The letter shows the herbicide recommendations produced by the program for the crop/weed/growth-stage combinations and allows the advisor to add the name and address of the client. The weed picture and full description can also be included so that any errors in identification or communication can be overcome before spraying. Most Australian farmers are pretty tolerant souls and accept that ad-

vice is just that and not tablets of stone stuff, but the Moores have attempted to protect themselves and their clients from all but the most cunning of idiots. If somebody uses HerbiGuide without identifying the target weed, checking the crop tolerances, and reading herbicide labels, then they probably deserve to lose their crop.

It is a joy to see software that is inventive, fills a direct need, works smoothly and is a comfortable tool to use. I bought version 2 and have based this article on a beta test version 3. I think that anyone with a broadacre spraying schedule could easily justify buying an IBM compatible computer just to run HerbiGuide. The program is an artificial intelligence system written and compiled from Pascal source code. It runs quickly, is upgraded every year for a modest fee (you must register your copy so the Moores can send upgrades) and costs \$180.00 from Albits, PO Box 44, Albany 6330 WA. □

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end of any PC, MS-Dos or Z80 machine and away you go. Boards, EPROM and 360K disk \$76 including postage for a short form kit. Gee, I wish I had this when I was a kid. For more information send a 41 cent stamp to Don McKenzie, 29 Ellesmere Cres, Tullamarine 3043 Vic. □

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A monthly treatise by PC expert Vern V. Shrunkle. J.P. S.L.O.B
B.A (failed, Calcutta), Ex St. John's Pietruck Corps, Holder of "Best Bantam at Show" for past eight years at West Wobbalong Royal Agricultural Exposition.

PCs for Blokes

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(Re-told and illustrated by Foote and Mowth)

Pssst! Over here, in the wardrobe. Had to make sure it was you and not those narks from the local sub-branch. Not that old uncle Vern is a coward, but last time I saw them, as I ducked through the West Wobbalong Medical and Dental Centre and CWA Ladies Rest Room, and out the back door, there was blood in their eyes. You might well ask what happened, and as it contains a lesson for all, so I'll tell you.



It all started when I sent away for the "Acme back-up-your-PC-on-your-video-recorder" kit. It seemed too good to be true cause all uncle Vern had to do was plug this card into the trusty old Soaring Seagull XT-turbo and run a lead to the VCR. Then, it was a simple task to back-up a life-time's software and data onto any old video tape...And they say there aren't any good ads in Pix!



My thoughts ran wild as I dreamt of the meagerbytes of lovely numbers and words and partrity bits I could store away for a rainy day. Within three days I had backed-up anything that moved.



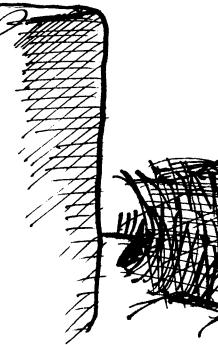
I guess I got a tad cocky, cause I started saying things like "The little woman can key in those 16,000 names and addresses Mr. President, and I'll back them up on tape so they never get lost again."



What had I got myself into? Making a database of every potential RSL member in our part of the state had only been attempted once before, and Cyril Sturbator was last seen, running stark naked into the bush, muttering something about the power lead on his Commodore 64 falling out at number 14,378.



Well I took the bat between my teeth, dusted off the old dBase IV and sat the little woman down to type. For days she went at it ... every time I went in with the cup that pleases (Woolworth's tea-bags, 90 seconds in the microwave) she'd be going "Anklebone, Frederick J." or "Dumphrey, Frederick J." or "Zuumstecker, Frederick J."



Well, the big day arrived and I installed it on the local RSL sub-branch's IBM model 30. I even left a back-up of the data on an old video tape I found lying in the President's safe.

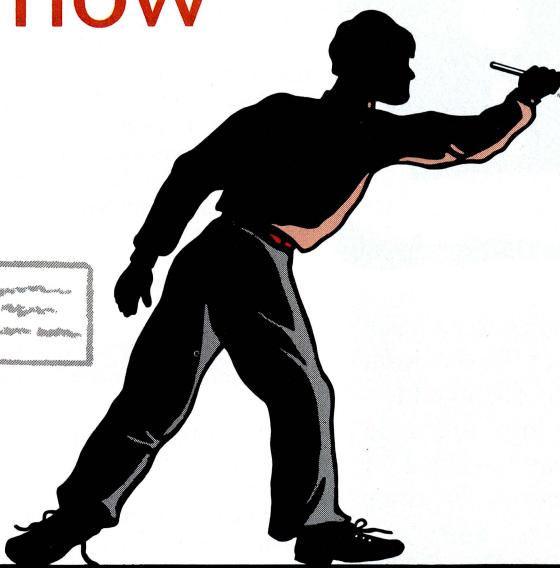


Now I know what you're thinking. You think the sub-branch committee is after me because the data was wrong or the little woman typed in the membership list of the Friends-of-Vietnam society by mistake. No such luck.



The enormity of what I'd done was only realised when last night's prawn and porno night was a lot more of the former and very little of the latter. Like I keep yelling through the locked front door, "If you're going to keep a copy of *Denise Does Dubbo* on a video-tape in your safe, **you ought to label it!**"

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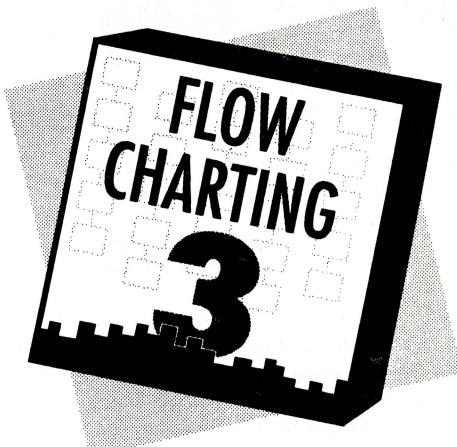
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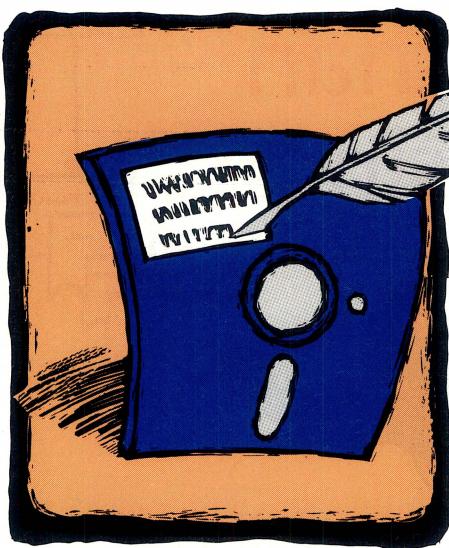
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then his articles on Hypertext convinced me. I've now reached the point of trial-linking the system and putting the finishing touches to all the links with the help of my advanced students. Thanks for giving me enough information to know where to start looking for the solution to my problem - I could never have done it in the Dos environment.

Edmund Chee
Melbourne Vic.

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Write Bytes, Your Computer, PO Box 227, Waterloo 2017 NSW.

Bible study

I remember reading a review of a Bible study package in your magazine some time ago. I'm developing a literature study package for university students and would like to contact the developer or distributor, and as I recall, there was no address listed in the article.

Bernie Heard
St Ives NSW

At the time we published Dr Parker's 'An electronic bible', the package wasn't available here. The response to the article was such that the Bible Society in NSW are now distributing it. Contact them at 23 Liverpool St, Ingleburn 2565 NSW; (02) 605 7822. We are also holding reviews on two other bible study packages by Dr Parker - watch for them in an upcoming issue.

Sold on Macs

I know it wasn't your intention, but you've sold me on Macs. I've been trying to develop an interactive learning system for my German language students on a PC and have met frustration all the way. Stewart Fist's discussion on 'courseware' about 12 months ago got me thinking, and

Fair go for dealers!

I AM A SALES manager in a large, city computer dealership. I usually enjoy the articles in YC; they are a great help in keeping me informed on the computer industry in Australia. I'm glad to see you've started a letters to the editor section again (remember Text File?) and the news items are very informative. One thing that I do not enjoy in your magazine is the way computer sales staff and dealers are referred to by some of your contributors and yourself - the usual tone is that we are in the same category as used car salesmen (my brother-in-law is one, incidentally). I can't speak for other dealers, but I do know in our shops that none of our floor staff were 'selling socks last week' (as you commented in a recent editorial). The reason for my letter is to tell a slightly different story. Have you ever tried to discuss computers with someone who doesn't have a clue, who nods their head at everything you say, whose only question on the \$5000 system you are showing them is 'can I get it in another color?' You do your best, but so many customers just don't bother to find out the basics of computers before they whip out their MasterCard. These are the ones that come back two weeks later complaining that it won't do what they want. Last week I had a chap come back wanting to return \$3000 worth of XT he'd bought for his business because it wouldn't run Lotus 1-2-3 version 3. Before he bought the system, he was asked what he wanted to do with it and replied along the lines of 'a bit of letter writing and simple accounting'. We told him to try 1-2-3 v2.2 (he's now rung back to say everything is fine). That was a case where we could offer some guidance and everyone was satisfied, but I know of other

cases where customers have tried even sillier things and then bad-mouthed the computer and the dealer. Perhaps you could print this piece of advice to potential purchasers (your magazine is the one I recommend to anyone who wants to know about computers and software): Don't think of buying a computer system until you know exactly what you want to use it for. Ideally, choose the software first and then pick the hardware to use with it. If you are going to commit thousands of dollars to a computer, learn enough about them to make an intelligent decision.

Name Supplied
Sydney NSW

Thanks for your letter, Chris - and I apologise if the ilk of you and your brother-in-law feel insulted. The computer industry is a bit like the parson's egg - and the bad bits are all anyone talks about. I guess that's because we expect service and don't comment on it when we get it, but whinge quick enough if we think we've been let down. You might be interested to know that I am currently visiting (as an anonymous computer newcomer) computer shops and asking a mix of questions. So far I've done eleven in Sydney, Melbourne and Brisbane; of those, I was only misled once and that was by someone who obviously was confused about RAM and ROM. Other than that, I've found the staff of the various shops all helpful and quite willing to admit when they didn't know something and usually went to some trouble to find out.

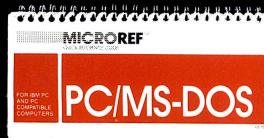
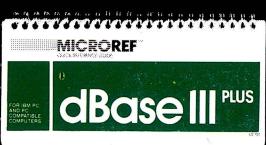
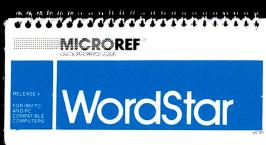
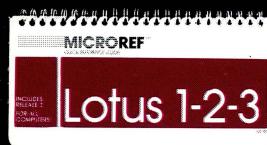
Potential purchasers, please note: in the September 1989 issue of YC was an article that covered the basics in buying a computer, 'Buying and upgrading a PC'; send us a stamped and self-addressed envelope, and we'll send you a copy.

Annual Index

We were unable to publish our Eighth Annual Index in our July issue - if you would like a copy, send a stamped, self-addressed envelope to: Annual Index, Your Computer, PO Box 227, Waterloo 2015 NSW. The Index details the reviews, application stories, features, user columns and 'hands-on' articles from August 1989 to July 1990, inclusive.

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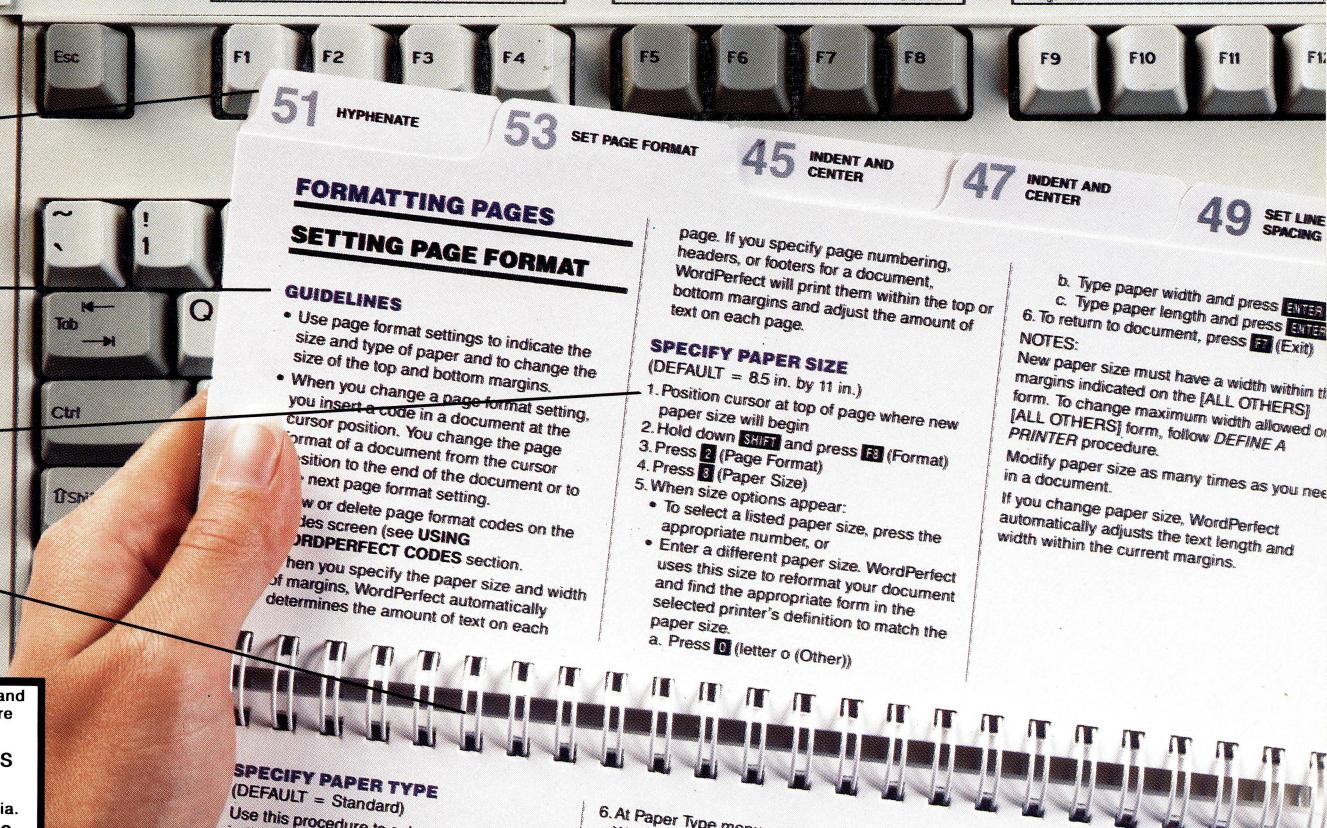
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